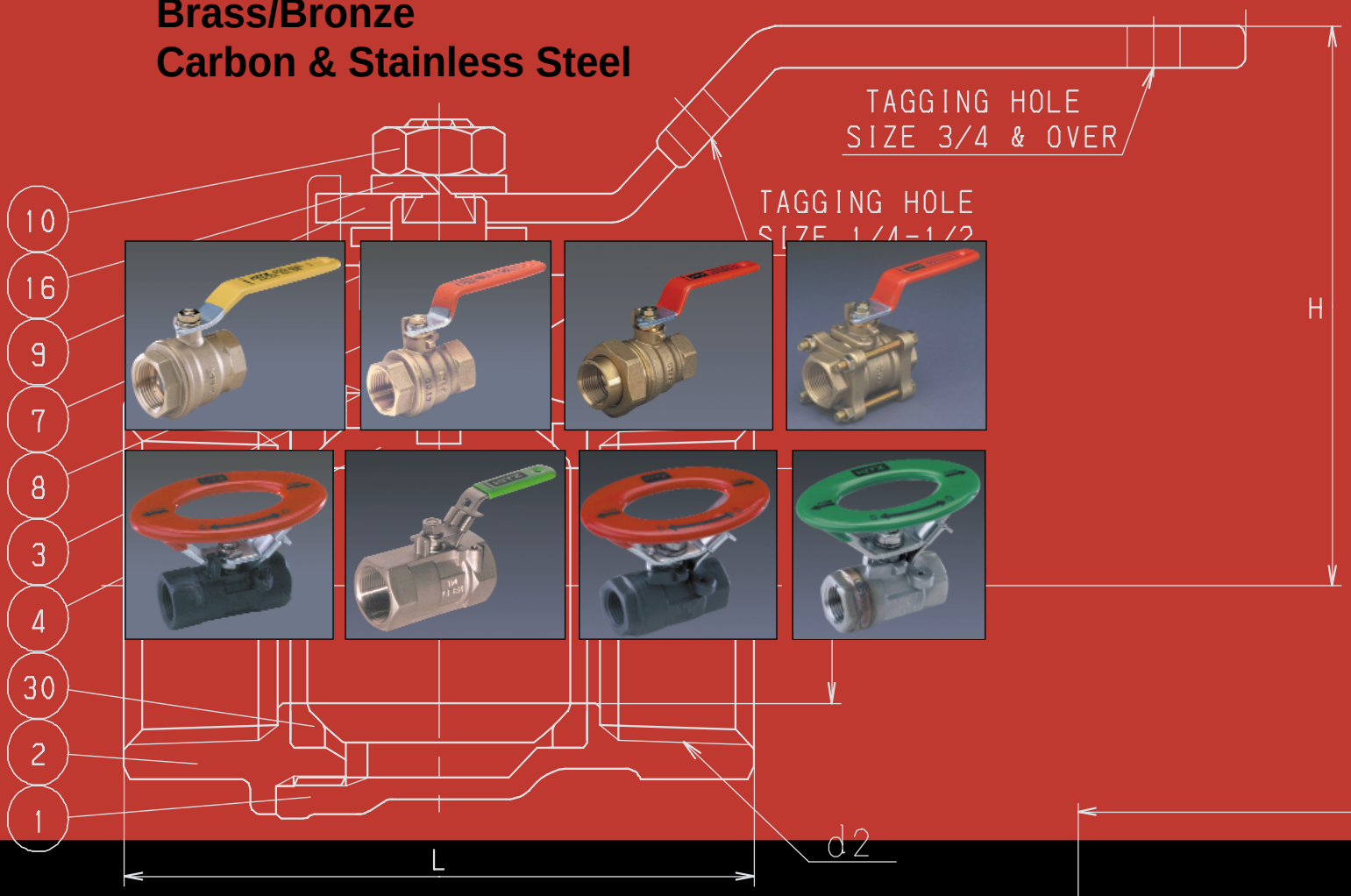
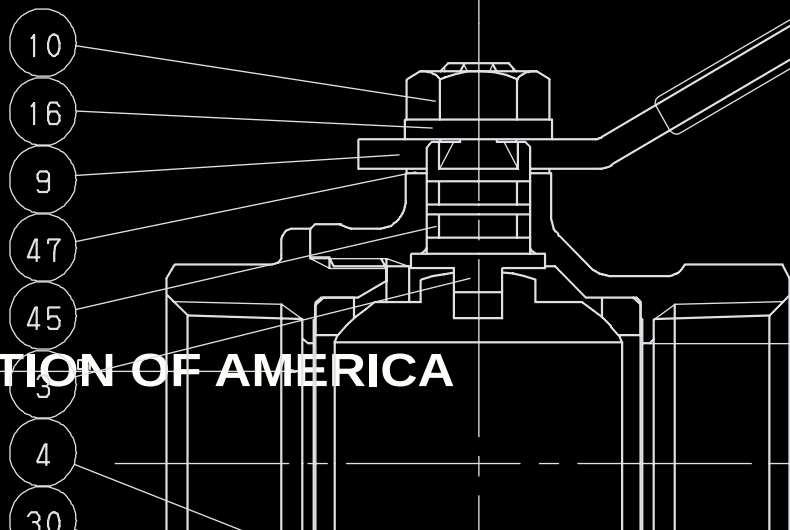
CBV-100-0603R

KITZ®

Commercial/Industrial Ball Valves

Brass/Bronze
Carbon & Stainless Steel





KITZ CORPORATION OF AMERICA

GENERAL TERMS AND CONDITIONS

ACCEPTANCE

All quotations are for acceptance within 30 days from date of quotation unless extended in writing. In the event a purchase order is placed after this time, the Seller's company reserves the right to requote prices of all valves offered. All orders and contracts are subject to credit approval and acceptance by KITZ.

FREIGHT

All materials will be shipped F.O.B. point of shipment – no freight allowance unless otherwise stated and agreed upon with the Buyer.

PRICES

There will be added to all prices quoted any sales, excise, or similar tax which Seller may be required to collect on or in connection with the sale. Seller reserves the right to cancel any order in the event that selling prices shall be established by Federal, State or other governmental regulation with respect to the products covered by the order which shall be lower than the prices specified in the order.

ESCALATION TERMS

Prices shown in this price schedule reflect the costs in effect at the time of publication. These prices will remain firm on all products with a quoted delivery of twenty six (26) weeks or less. On products with a quoted delivery of more than 26 weeks, the Seller has a right to price and invoice at the applicable price sheet in effect at the time of shipment. In no event will the invoiced price be less than price originally quoted.

DEFERRED SHIPMENTS

If for any reason the Buyer desires to delay shipments more than 30 days after manufacturing or to place a hold or to stop the order during the manufacturing cycle, the Seller's company reserves the right to consider the order cancelled and to invoke cancellation charges.

CREDIT TERMS

As quoted. Overdue balances will be subject to 1.5% service charge per month on such indebtedness.

DELIVERIES

Shipments made to the Buyer shall at all times be subject to the approval of Seller's Credit Department. All schedules of shipments are estimated as closely as possible and Seller will use its best effort to ship within the time schedule but does not guarantee to do so. Seller shall not be liable for any direct, indirect, or consequential damage or loss caused by delay in delivery, regardless of the cause of delay. Items offered from stock are subject to prior sale.

RETURNS

No returns are allowed without prior arrangements made with the Seller. Product considered for return must be in new, resalable condition and of current design.

WARRANTY

Seller will replace without charge or refund the purchase price of products manufactured by Seller which prove to be defective in material or workmanship, provided in each case that the product is properly installed and is used in the service for which Seller recommends it and that written claim, specifying the alleged defect, is presented to the Seller within one year from the date of shipment. Seller shall in no event be responsible for claims of A) labor, expenses, or other damages occasioned by defective parts or products or for B) consequential or secondary damages. **The Warranty stated in this paragraph is in lieu of all other warranties, either expressed or implied. With respect to warranties, this paragraph states Buyer's exclusive remedy and Seller's exclusive liability.**

DESIGN

Because of a policy of continuous product improvement, Seller reserves the right to change design, materials or specifications without notice. There will be a charge for modifying an order after it has been entered when such change or modification results in additional engineering or clerical work for either KITZ or its suppliers.

NOTE

KITZ reserves the right to correct any obvious clerical errors in quotations, invoices and other contracts.

KITZ®
A PRODUCT OF TECHNOLOGY

GENERAL INDEX

BALL VALVES

CODE # INDEX

BRASS/BRONZE BALL VALVES ILLUSTRATED INDEX

NUMERICAL INDEX

150 WSP/600 WOG
One Piece
Reduced Port

AKTK Code # 51
Size 1/4″ - 2″
(Threaded)

150 WSP/600 WOG
Two Piece
Full Port

AKSZA Code # 58
Size 1/4″ - 4″
(Threaded)

CSZA Code # 59
Size 3/8″ - 3″
(Solder)

150 WSP/600 WOG
Two Piece
Full Port

AKSZAW Code # 58W
Size 1/4″ - 2″
(Threaded)

CSZAW Code # 59W
Size 3/8″ - 2″
(Solder)

150 WSP/600 WOG
Two Piece, Full Port
CSA (US/C), UL, FM

AKSZAN Code # 58N
Size 1/4″ - 2″
(Threaded)

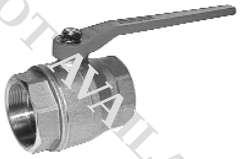
CSZAN Code # 59N
Size 3/8″ - 2″
(Solder)

150 WSP/600 WOG
Two Piece, Full Port
CSA (US/C), UL, FM

AKSZANW Code # 58NW
Size 1/4″ - 2″
(Threaded)

CSZANW Code # 59NW
Size 3/8″ - 2″
(Solder)

100 PSI @ 300º F/600 WOG
Two Piece
Regular Port



AKTH Code #56
Size 2 1/2″ - 4″
(Threaded)

CTH Code #57
Size 2 1/2″, 3″
(Solder)

150 WSP/600 WOG
Two Piece
Full Port

AKTAF Code # 68
Size 1/4″ - 2″
(Threaded)

CTAF Code # 69
Size 3/8″ - 3″
(Solder)

150 WSP/600 WOG
Two Piece, Full Port
CSA (US/C), UL, FM

AKTAFM Code # 68M
Size 1/4″ - 2″
(Threaded)

AKTFM Code # 68AM
Maintenance Free
Double O-Ring Stem Seal Design
Locking Lever Handle

150 WSP
600 WOG (1/4″ - 2″)
400 WOG (2 1/2″ - 4″)
Two Piece, Full Port

AKTAFP Code # 68P
Size 1/4″ - 4″
(Threaded)

BRASS/BRONZE BALL VALVES
ILLUSTRATED INDEX

NUMERICAL INDEX

250 WSP/600 WOG*
Locking Handle, S.S. Trim
Mounting Pad, Full Port

AKTAFPM Code # 68PM
Size 1/4″ - 4″
(Threaded)

* 2½″ -4″ 400 W O G

200ºF @ 400 PSI/600 WOG
Drainable
Full Port

AKTFD Code # 68AD
Size ½″ - 1″
(Threaded)

CTFD Code # 69AD
Size ½″ - 1″
(Solder)

150 WSP/600 WOG
Cap & Chain
Full Port

AKTAFC Code # 68C
Size ½″, ¾″
(Threaded)

CTAFC Code # 69C
Size ½″, ¾″
(Solder)

150 WSP/600 WOG
Full Port

AKTAFO Code # 68O
Size 1/4″ - 1″
(IPS x Male)

CTAFO Code # 69O
Size 1/4″ - 1″
(C x Male)

150 PSI @ 300º/600 WOG
Single Union
Full Port

AKTAFU Code # 68U
Size 1/4″ - 2″
(Threaded)

CTAFU Code # 69U
Size 3/8″ - 2″
(Solder)

600 WOG
Full Port

AKTFB Code # 68AB
Size ½″ - 1″
(Threaded x Barbed)

200 WOG
Safety Exhaust, Locking Handle
Full Port

AKTAFS Code # 68S
Size 1/4″ - 2″
(Threaded)

KITZ®
A PRODUCT OF TECHNOLOGY

BRASS/BRONZE BALL VALVES
ILLUSTRATED INDEX

NUMERICAL INDEX

150WSP/600 WOG
Three Piece, Mounting Pad
Full Port

AK3TM Code # 62
Size 1/4″ - 2″
(Threaded)

C3TM Code # 63
Size 3/8″ - 2″
(Solder)

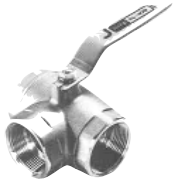
150 WSP/600 WOG
Three Piece, S.S.Trim,
Mounting Pad, Full Port

AK3TMM Code # 62M
Size 1/4″ - 2″
(Threaded)

150 WSP/600 WOG
Three Piece, Grooved Ends
Mounting Pad, Full Port

GJ3TM Code # 62G
Size 1 1/2″ - 2 1/2″
(Threaded)

150 PSI @ 300º F/400 WOG
3-Way
L-Port



AKTN Code # 54
Size 1/4, 3/8, 2 1/2, 3″
(Threaded)

CTN Code # 55
Size 1 1/4″ - 2″
(Solder)

150 PSI @ 300º F/400 WOG
3-Way, Mounting Pad
L-Port

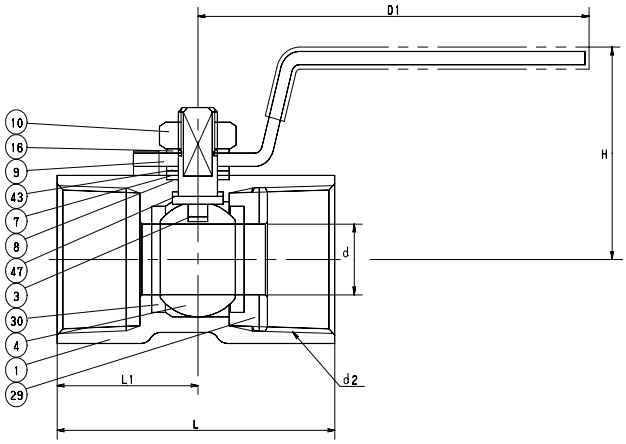
AKTNP Code # 54P
Size 1/2″ - 2″
(Threaded)

CTNP Code # 55P
Size 1/2″ - 1″
(Solder)

FORGED BRASS BALL VALVE

One Piece Body • Reduced Port
G/F + PTFE Seats/Seals • Blowout Proof Stem
Chrome Plated Ball • Stainless Steel Lever Handle

CODE # 51 (AKTK)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
3	STEM	SPECIAL BRASS (KITZ "K" METAL)
4	BALL	(1) FORGED BRASS (B283, C37700)
7	GLAND	STAINLESS STEEL (A276 TYPE 430)
8	GLAND PACKING	G/F PTFE
9	HANDLE	(2) STAINLESS STEEL (A276 TYPE 430)
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
29	INSERT	FORGED BRASS (B124, C37700)
30	BALL SEATS	G/F PTFE
43	SPRING	STAINLESS STEEL (A276 TYPE 304)
47	THRUST WASHER	REINFORCED PTFE

NOTES: (1) CR. PLATING
(2) WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	APPROX. NET WT.	CARTON QTY
1/4	.18	1.22	2.36	1.54	.75	22	120
3/8	.28	1.42	2.76	1.73	.83	26	120
1/2	.36	1.61	3.35	2.22	1.08	51	120
3/4	.49	1.73	3.35	2.32	1.18	61	96
1	.63	1.89	3.94	2.79	1.42	54	54
1 1/4	.79	1.89	3.94	3.07	1.57	52	32
1 1/2	.96	2.56	4.92	3.27	1.67	47	24
2	1.26	2.83	4.92	3.94	2.01	52	16

SPECIFICATION

Approved valve shall have one piece forged brass body, blowout proof stem, G/F + PTFE seats/seals, chrome plated ball, stainless steel handle and reduced port design. Valves shall be pressure rated to 150 WSP/600 WOG.

KITZ Code No. 51 (AKTK) Threaded Ends

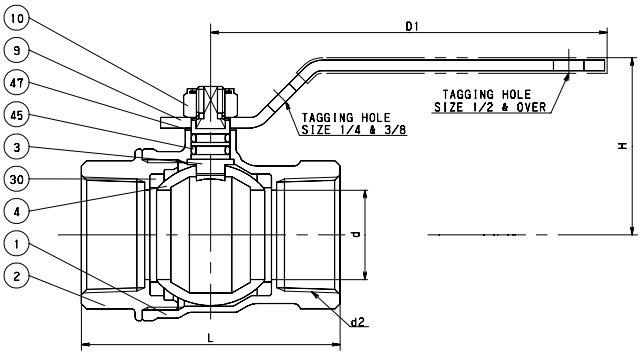
FORGED BRASS BALL VALVE

MAINTENANCE FREE DOUBLE O-RING STEM SEALS

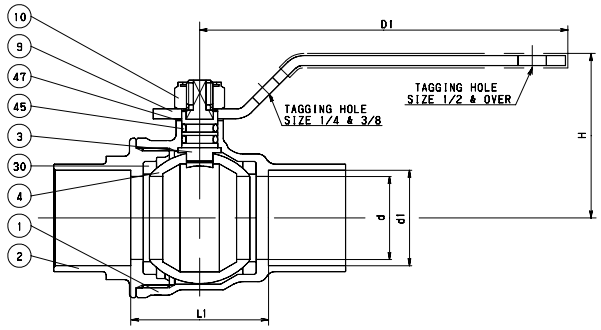
Two Piece Body • Full Port • Chrome Plated / Vented Ball
Blowout Proof Stem (Ni Plated) • PTFE Seats

CSA (US/C) • UL • FM**

CODE # 58 (AKSZA)
THREADED



CODE # 59 (CSZA)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and certified to CSA, UL & FM.

KITZ Code No. 58 (AKSZA) Threaded Ends
59 (CSZA) Solder Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110 - REPLACES US. FED.	
SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE
150 PSI SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) BRASS ROD (B16)
4	BALL (Vented)	(2) FORGED BRASS (B283, C37700) STRAIGHT OR HOLLOW BALL
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PBT

NOTES:
(1) Ni PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
1/4	.39	1.46	2.76	1.65	1.05	.381	.377	29	120
3/8	.39	1.46	2.76	1.65	1.11	.506	.502	29	120
1/2	.59	1.57	3.15	2.08	1.13	.631	.627	29	96
3/4	.79	1.69	3.15	2.36	1.37	.881	.877	45	60
1	.98	1.97	4.33	2.83	1.64	1.132	1.128	60	36
1 1/4	1.26	2.16	4.33	3.31	2.00	1.382	1.378	68	24
1 1/2	1.57	2.52	5.90	3.62	2.35	1.633	1.628	50	16
2	1.97	2.83	5.90	4.33	2.83	2.133	2.128	71	16

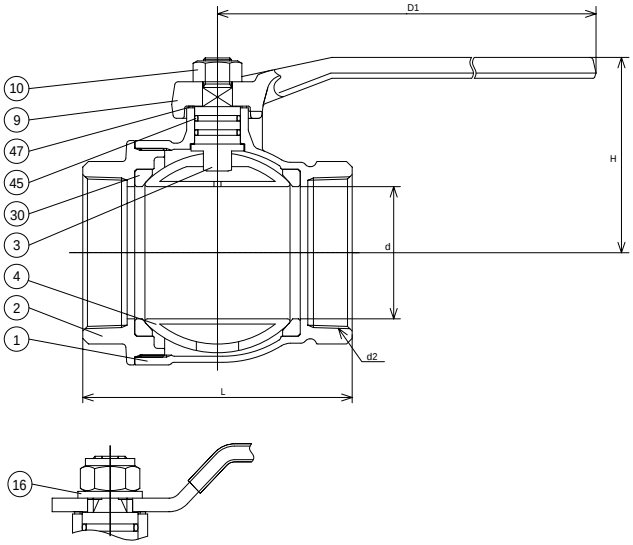
**CSA (US/C):
ASME B16.33 – 125G
AGA 3-88 – 2/5G
CGA 9.1 M97/ANSI 21.15-1997 – .5G
CGA 3.16-M88 – 125G
CGA CR 91-002 - 2G
CGA 9.2 M-88 – .5G
UL-258 – 175 WWP (Fire Protection Trim Valves)
FM-1140 – 175 WWP (Fire Protection Systems)

CAST BRONZE BALL VALVE

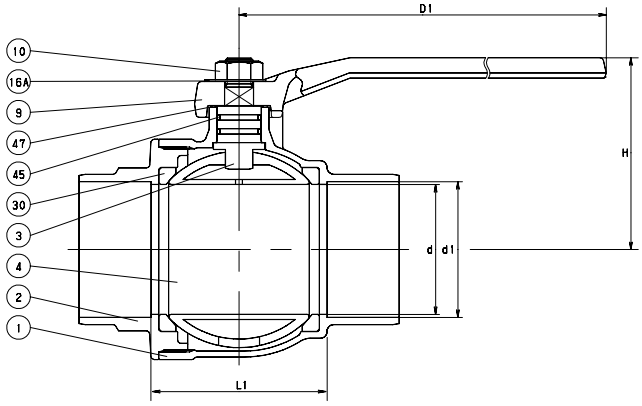
MAINTENANCE FREE DOUBLE O-RING STEM SEALS

Two Piece Body • Full Port • Chrome Plated / Vented Ball
Blowout Proof Stem (Ni Plated) • PTFE Seats

CODE # 58 (AKSZA)
THREADED



CODE # 59 (CSZA)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110 - REPLACES US. FED. SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE
150 PSI SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST BRONZE (B62)
2	BODY CAP	CAST BRONZE (B62)
3	STEM	(1) BRASS ROD (B16)
4	BALL (Vented) (2 1/2″)	(2) FORGED BRASS
	(3″&4″)	(2) CAST BRASS STRAIGHT OR HOLLOW BALL
9	HANDLE (2 1/2″)	(3) CARBON STEEL
	(3″&4″)	DUCTILE IRON
10	HANDLE NUT	CARBON STEEL
16	WASHER (2 1/2″)	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PTFE

NOTES:
(1) Ni PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES								
d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
2 1/2	2.56	3.98	7.87	5.35	3.51	2.633	2.628	18	57
3	2.99	4.42	11.81	6.14	4.06	3.133	3.128	31	64
4	3.94	5.15	11.81	7.60	-	-		27	54

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110.

KITZ Code No. 58 (AKSZA) Threaded Ends
59 (CSZA) Solder Ends

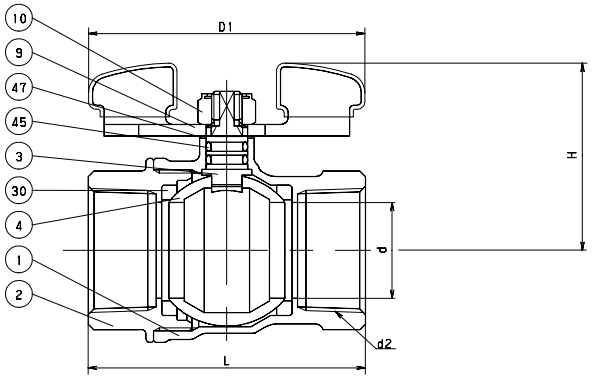
FORGED BRASS BALL VALVE

MAINTENANCE FREE DOUBLE O-RING STEM SEALS

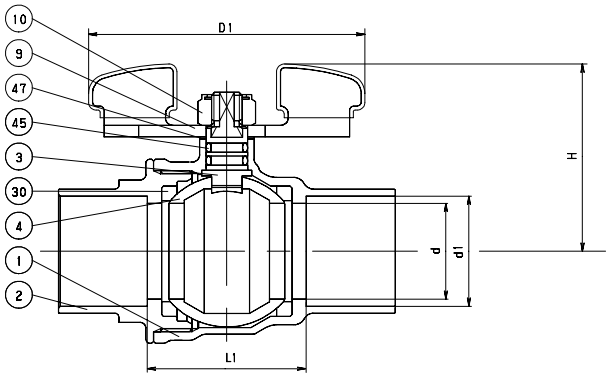
Two Piece Body • Full Port • Chrome Plated / Vented Ball
Blowout Proof Stem (Ni Plated) • PTFE Seats

CSA (US/C) • UL • FM**

CODE # 58W (AKSZAW)
THREADED



CODE # 59W (CSZAW)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110 - REPLACES US. FED. SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE
150 PSI SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) BRASS ROD (B16)
4	BALL (Vented)	(2) FORGED BRASS (B283, C37700) STRAIGHT OR HOLLOW BALL
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PBT

NOTES: (1) Ni PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES								
d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
1/4	.39	1.32	2.17	1.65	1.05	-	-	29	120
3/8	.39	1.32	2.17	1.65	1.11	.506	.502	29	120
1/2	.59	1.55	3.76	2.08	1.13	.631	.627	29	96
3/4	.79	1.70	3.15	2.36	1.37	.881	.877	45	60
1	.98	2.06	4.33	2.83	1.64	1.132	1.128	60	36
1 1/4	1.26	2.27	4.33	3.31	2.00	1.382	1.378	68	24
1 1/2	1.57	2.88	5.90	3.62	2.35	1.633	1.628	50	16
2	1.97	3.17	5.90	4.33	2.83	2.133	2.128	71	16

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design with wing handle. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and CSA, UL & FM.

KITZ Code No. 58W (AKSZAW) Threaded Ends
59W (CSZAW) Solder Ends

**CSA (US/C):
ASME B16.33 – 125G
AGA 3-88 – 2/5G
CGA 9.1 M97/ANSI 21.15-1997 – .5G
CGA 3.16-M88 – 125G
CGA CR 91-002
CGA 9.2 M-88 – .5G
UL-258 – 175 WWP (Fire Protection Trim Valves)
FM-1140 – 175 WWP (Fire Protection Systems)

FORGED BRASS BALL VALVE

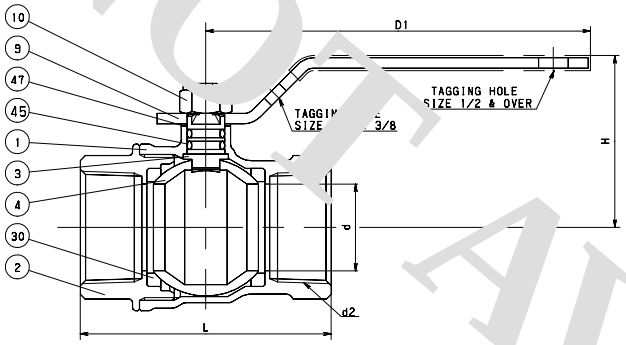
NSF 61 CERTIFIED

Two Piece Body • Full Port • Chrome Plated / Vented Ball

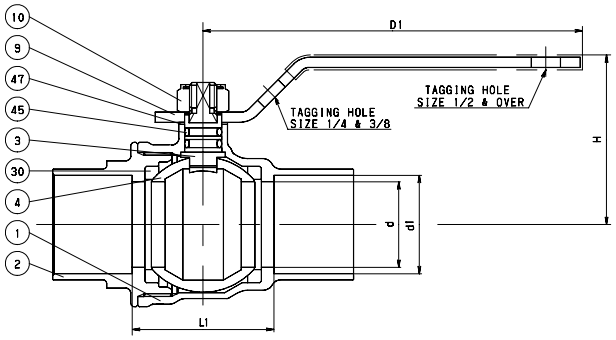
Blowout Proof Stem (Ni Plated) • PTFE Seats/Maintenance Free Double O-Ring Stem Seals

CSA (US/C) • UL • FM**

CODE # 58N (AKSZAN)
THREADED



CODE # 59N (CSZAN)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART		SPECIFICATION
1	BODY	(1)	FORGED BRASS (KITZ "KEEPALLOY")
2	BODY CAP	(1)	FORGED BRASS (KITZ "KEEPALLOY")
3	STEM	(1) (2)	BRASS ROD (KITZ "KEEPALLOY")
4	BALL (Vented)	(1) (3)	FORGED BRASS (KITZ "KEEPALLOY") STRAIGHT OR HOLLOW BALL
9	HANDLE	(4)	CARBON STEEL
10	HANDLE NUT		CARBON STEEL
30	BALL SEATS		PTFE
45	O-RINGS		EPDM
47	THRUST WASHER		PBT

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT LEAD FREE BRASS MATERIAL BASED ON ASTM CW602N.
(2) Ni PLATING
(3) CR. PLATING
(4) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY.
1/4	.39	1.46	2.76	1.65	-	.381	.377	29	120
3/8	.39	1.46	2.76	1.65	.89	.506	.502	29	72
1/2	.59	1.57	3.15	2.08	1.08	.631	.627	29	96
3/4	.79	1.69	3.15	2.36	.86	.881	.877	45	60
1	.98	1.97	4.33	2.83	1.01	1.132	1.128	60	36
1 1/4	1.26	2.16	4.33	3.31	1.37	1.382	1.378	68	24
1 1/2	1.57	2.52	5.90	3.62	1.44	1.633	1.628	50	16
2	1.97	2.83	5.90	4.33	1.65	2.133	2.128	71	16

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and Certified to NSF 61, CSA, UL & FM.

KITZ Code No. 58N (AKSZAN) Threaded Ends
59N (CSZAN) Solder Ends

**CSA (US/C):
ASME B16.33 – 125G
AGA 3-88 – 2/5G
CGA 9.1 M97/ANSI 21.15-1997 – .5G
CGA 3.16-M88 – 125G
CGA CR 91-002
CGA 9.2 M-88 – .5G
UL-258 – 175 WWP (Fire Protection Trim Valves)
FM-1140 – 175 WWP (Fire Protection Systems)

FORGED BRASS BALL VALVE

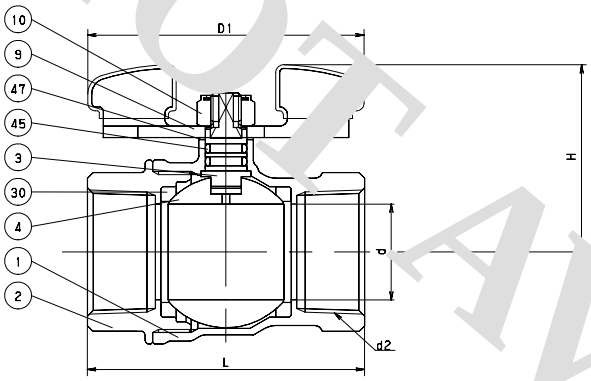
NSF 61 CERTIFIED

Two Piece Body • Full Port • Chrome Plated / Vented Ball

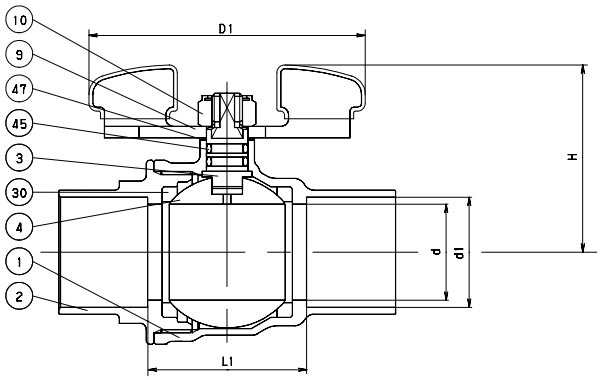
Blowout Proof Stem (Ni Plated) • PTFE Seats/Maintenance Free Double O-Ring Stem Seals

CSA (US/C) • UL • FM**

CODE # 58NW (AKSZANW)
THREADED



CODE # 59NW (CSZANW)
SOLDER*



SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	(1) FORGED BRASS (KITZ "KEEPALLOY")
2	BODY CAP	(1) FORGED BRASS (KITZ "KEEPALLOY")
3	STEM	(1) (2) BRASS ROD (KITZ "KEEPALLOY")
4	BALL (Vented)	(1) (3) FORGED BRASS (KITZ "KEEPALLOY") STRAIGHT OR HOLLOW BALL
9	HANDLE	(4) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PBT

NOTES: (1) PROPRIETARY DEZINCIFICATION RESISTANT, LEAD FREE BRASS MATERIAL BASED ON ASTM B-584.
(2) Ni PLATING
(3) CR. PLATING
(4) ELECTROPLATED ZINC WITH SUPPLEMENTAL COATING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
1/4	.39	1.32	2.17	1.65	-	-	-	29	120
3/8	.39	1.32	2.17	1.65	.89	.506	.502	29	120
1/2	.59	1.55	2.76	2.08	1.08	.631	.627	29	96
3/4	.79	1.70	2.76	2.36	.86	.881	.877	45	60
1	.98	2.06	3.94	2.83	1.01	1.132	1.128	60	36
1 1/4	1.26	2.27	3.94	3.31	1.37	1.382	1.378	68	24
1 1/2	1.57	2.88	5.12	3.62	1.44	1.633	1.628	50	16
2	1.97	3.17	5.12	4.33	1.65	2.133	2.128	71	16

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, Maintenance free double o-ring stem seals, chrome plated ball and full port design with wing handle. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and Certified to NSF 61, CSA, UL & FM.

KITZ Code No. 58NW (AKSZANW) Threaded Ends
59NW (CSZANW) Solder Ends

**CSA (US/C):
ASME B16.33 – 125G
AGA 3-88 – 2/5G
CGA 9.1 M97/ANSI 21.15-1997 – .5G
CGA 3.16-M88 – 125G
CGA CR 91-002
CGA 9.2 M-88 – .5G
UL-258 – 175 WWP (Fire Protection Trim Valves)
FM-1140 – 175 WWP (Fire Protection Systems)

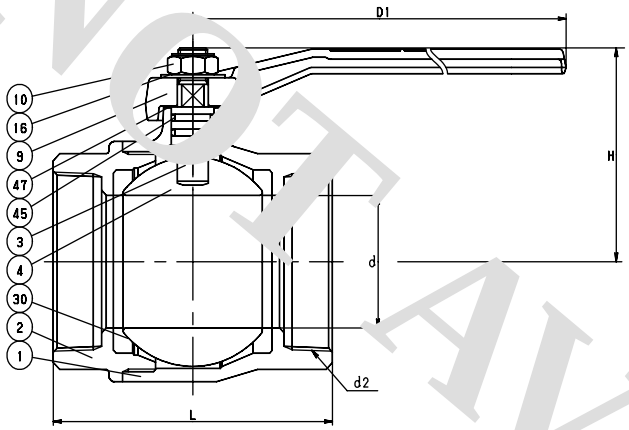
FORGED BRASS/CAST BRONZE BALL VALVE

MAINTENANCE FREE DOUBLE O-RING STEM SEALS

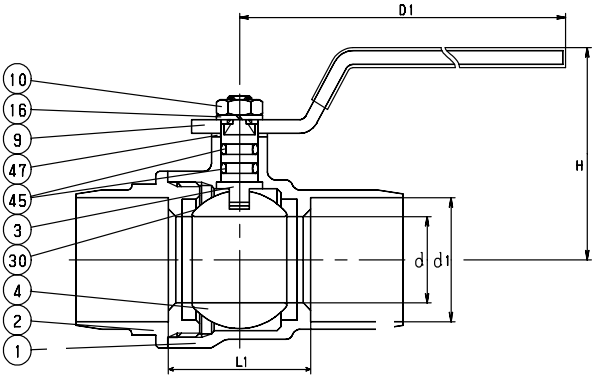
Two Piece Body • Regular Port

Blowout Proof Stem • Chrome Plated Ball • PTFE Seats

CODE # 56 (AKTH)
THREADED



CODE # 57 (CTH)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110 - REPLACES US. FED. SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE
100 PSI @ 300ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST		
N	NAME OF PART	SPECIFICATION
	BODY (2½″-3″)	FORGED BRASS (B283, C37700)
	(	CAST BRONZE (B584, C84400)
2	ODY C P (2½″-3″)	FORGED BRASS (B283, C37700)
	(4″)	CAST BRONZE (B584, C84400)
3	STE	(1) SPECIAL BRASS (KITZ "K-METAL")
4		(2) CAST BRASS (B584, C85700)
9	HA DLE (#57 2½″)	(3) CARBON STEEL
	(3″-4″)	DUCTILE IRON (A536, Gr. 60-40-18)
10	HANDLE	CARBON STEEL
16	NAME PLATE	AL UM
30	BALL SEATS	
45	O-RINGS	PM
47	THRUST WASHER	G/F P E

NOTES:
(1) PROPRIETARY DEZINCIFICATION RES NT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTI COVERING

DIMENSIONS - WEIGHTS - QUANTITIES									
d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPRO NET WT.	CARTON QTY
2½	1.97	3.58	7.87	5.00	2.85	2.633	2.628	57	6
3	2.56	4.13	11.81	6.02	5.31	3.133	3.128	64	4
4	-	4.88	15.75	7.05	-	-		54	2

SPECIFICATION

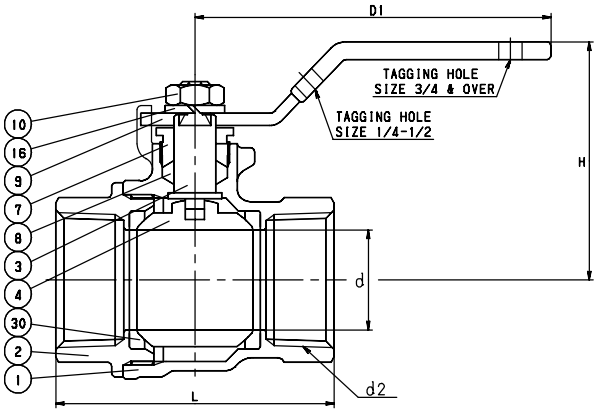
Approved valve shall have two piece forged brass or cast bronze body, blowout proof stem, PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and regular port design. Valve shall be pressure rated to 600 WOG and conform to MSS-SP 110.

KITZ Code No. 56 (AKTH) Threaded End
57 (CH) Solder Ends

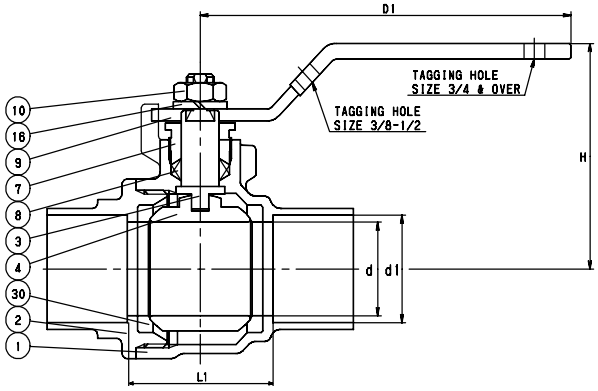
FORGED BRASS/CAST BRONZE BALL VALVE

Two Piece Body • Full Port
Blowout Proof Stem • Chrome Plated / Vented Ball • PTFE Seats and Seals
CSA (US/C) • UL • FM**

CODE # 68 (AKTAF)
THREADED (1/4″-2″)
For larger sizes see P. BV-17



CODE # 69 (CTAF)
SOLDER* (3/8″-3″)
UL • FM**



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass or cast bronze body, blowout proof stem, PTFE seats/seals, chrome plated ball and full port design. Valves sizes 1/4″-2″ shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and certified to CSA, UL & FM. Valve sizes 2 1/2″-3″ shall be pressure rated to 150 WSP/400 WOG and conform to MSS-SP 110.

KITZ Code No. 68 (AKTAF) Threaded Ends
69 (CTAF) Solder Ends (UL & FM)

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110 - REPLACES US. FED. SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI NON-SHOCK COLD WATER, OIL OR GAS
400 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY (1/4″-3″)	FORGED BRASS (B283, C37700)
	(2 1/2″-3″)	CAST BRONZE (B584, C84400)
2	BODY CAP (1/4″-2″)	FORGED BRASS (B283, C37700)
	(2 1/2″-3″)	CAST BRONZE (B584, C84400)
3	STEM	(1) SPECIAL BRASS (KITZ, "K-METAL")
4	BALL (Vented) (1/4″-2″)	(2) FORGED BRASS (B283, C37700)
	(2 1/2″-3″)	CAST BRONZE (B584, C84400)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT (1/4″-2 1/2″)	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
16A	WASHER (3″)	CARBON STEEL
30	BALL SEATS	PTFE
123	HANDLE BOLT (3″)	CARBON STEEL

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

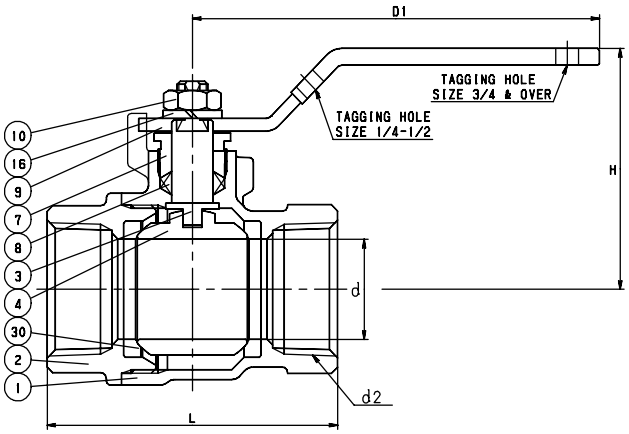
d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
1/4	.39	1.54	3.23	1.61	-	-	-	48	120
3/8	.39	1.54	3.23	1.65	1.05	.506	.502	48	120
1/2	.59	1.65	3.23	2.09	1.13	.631	.627	52	96
3/4	.79	2.01	3.94	2.36	1.37	.881	.877	50	60
1	.98	2.32	5.12	2.83	1.64	1.132	1.128	51	36
1 1/4	1.26	2.52	5.12	3.23	2.00	1.382	1.378	50	24
1 1/2	1.57	2.87	5.91	3.62	2.35	1.633	1.628	54	16
2	1.97	3.15	5.91	4.13	2.83	2.133	2.128	72	16
2 1/2	2.56	4.25	7.78	-	3.48	2.633	2.628	17	2
3	2.99	4.80	11.81	-	4.04	3.113	3.128	26	2

**CSA (US/C):
ASME B16.33 – 125G
CGA 3.16-M88 – 125G
UL-125, 842, 1769
FM-1140 – 175 WWP (Fire Protection Systems)

FORGED BRASS BALL VALVE

STAINLESS STEEL TRIM
Two Piece Body • Full Port
Blowout Proof Stem • Stainless Steel / Vented Ball • PTFE Seats and Seals
CSA (US/C) • UL • FM**

CODE # 68M (AKTAFM)
THREADED



STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	STAINLESS STEEL (A276, TYPE 316)
4	BALL (Vented)	STAINLESS STEEL (A276, TYPE 316 or A351 Gr. CF8M)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
30	BALL SEATS	PTFE

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
1/4	.39	1.54	3.23	1.61	48	120
3/8	.39	1.54	3.23	1.65	49	120
1/2	.59	1.65	3.23	2.09	52	96
3/4	.79	2.01	3.94	2.36	50	60
1	.98	2.28	5.12	2.83	51	36
1 1/4	1.26	2.52	5.12	3.23	50	24
1 1/2	1.57	2.87	5.91	3.62	54	16
2	1.97	3.15	5.91	4.13	43	8

SPECIFICATION

Approved valve shall have two piece forged brass body, stainless steel trim, blowout proof stem, PTFE seats/seals,and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and Certified to CSA, UL & FM.

KITZ Code No. 68M (AKTAFM) Threaded Ends

**CSA (US/C):
ASME B16.33 – 125G
CGA 3.16-M88 – 125G
UL-125, 842, 1769
FM-1140 – 175 WWP (Fire Protection Systems)

FORGED BRASS BALL VALVE

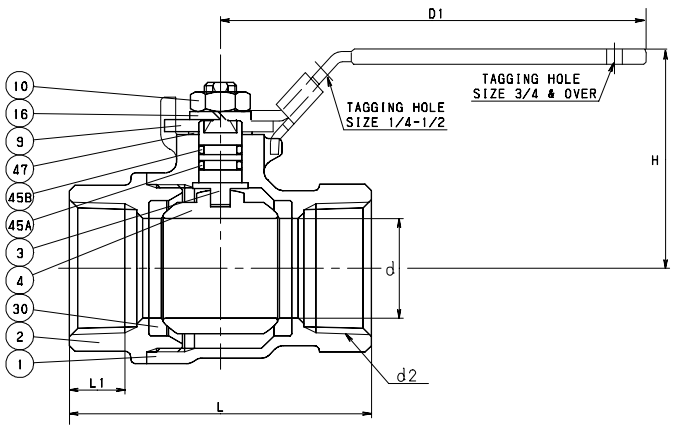
STAINLESS STEEL TRIM

Two Piece Body • Full Port • Blowout Proof Stem

PTFE Seats/Maintenance Free Double O-Ring Stem Seals • Locking Lever Handle

CSA (US/C)**

CODE # 68AM (AKTFM)
THREADED



STANDARDS		
	END TO END	KITZ
	THREADED ENDS	ANSI B1.20.1
	WALL THICKNESS	KITZ
	CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI @ 300ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	STAINLESS STEEL (A276, TYPE 316)
4	BALL	STAINLESS STEEL (A276, TYPE 316 or A351 Gr. CF8M)
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
30	BALL SEATS	PTFE
45A	O-RING	FPM
45B	O-RING	NBR
47	THRUST WASHER	POM

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES							
d2 SIZE	d	H	D1	L	L1	APPROX. NET WT.	CARTON QTY
1/4	.39	1.42	3.23	1.61	.33	48	120
3/8	.39	1.42	3.23	1.65	.35	49	120
1/2	.59	1.54	3.23	2.09	.47	52	96
3/4	.79	1.89	3.94	2.36	.51	50	60
1	.98	2.17	5.12	2.83	.61	51	36
1 1/4	1.26	2.40	5.12	3.23	.63	50	24
1 1/2	1.57	2.68	5.91	3.62	.65	54	16
2	1.97	2.99	5.91	4.13	.69	43	8

SPECIFICATION

Approved valve shall have two piece forged brass body, stainless steel trim, blowout proof stem, PTFE seats/maintenance free double o-ring stem seals, and full port design. Valves shall be pressure rated to 150 PSI @ 300ºF/ 600 WOG and conform to MSS-SP 110 and Certified to CSA (US/C).

KITZ Code No. 68AM (AKTFM) Threaded Ends

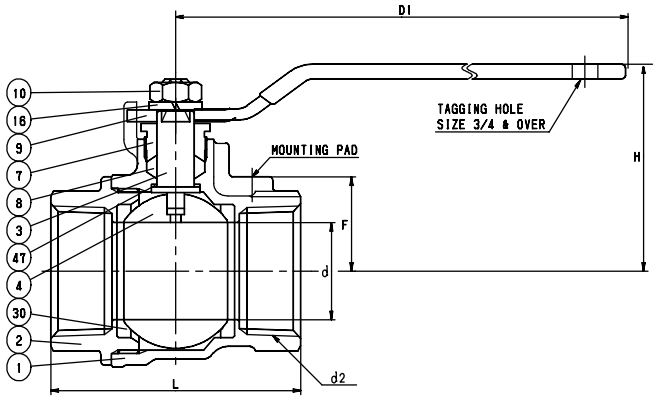
**CSA (US/C):
ASME B16.33 – 125G
CGA 3.16-M88 – 125G

FORGED BRASS/CAST BRONZE BALL VALVE

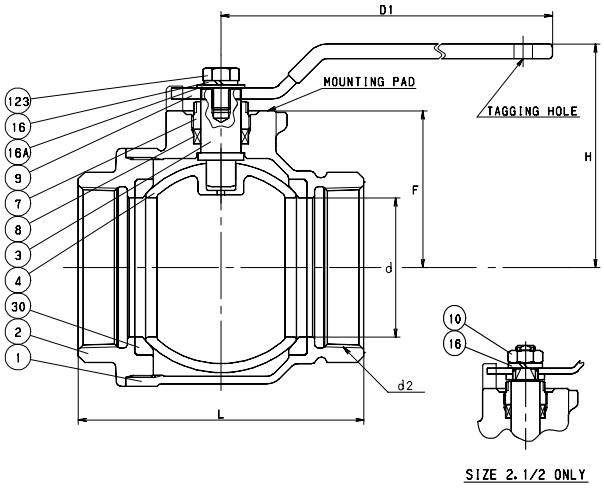
MOUNTING PAD

Two Piece Body • Full Port • Chrome Plated Ball
Blowout Proof Stem • PTFE Seats and Seals
CSA (US/C) • UL • FM (1/4″ - 2″)**

CODE # 68P (AKTAFP)
THREADED



CODE # 68P (AKTAFP)
2 1/2″ - 4″
THREADED



SPECIFICATION

Approved valve shall have two piece forged brass or cast bronze body with mounting pad, blowout proof stem, PTFE seats/seals, chrome plated ball, and full port design. Valve sizes 1/4″-2″ shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and certified to CSA, UL & FM. Valve sizes 2 1/2″-4″ shall be pressure rated to 150 WSP/400 WOG and conform to MSS-SP 110.

KITZ Code No. 68P (AKTAFP) Threaded Ends

**CSA (US/C):
ASME B16.33 – 125G
CGA 3.16-M88 – 125G
UL-125, 842, 1769
FM-1140 – 175 WWP (Fire Protection Systems)

STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110 - REPLACES US. FED. SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI (1/4″-2″) - NON-SHOCK COLD WATER, OIL OR GAS
400 PSI (2 1/2″-4″) - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

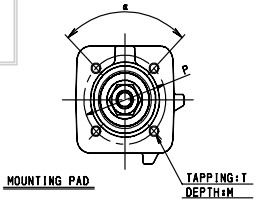
MATERIAL LIST

NO.	NAME OF PART		SPECIFICATION
1	BODY		FORGED BRASS (B283, C37700)
	(2 1/2″- 4″)		CAST BRONZE (B584, C84400)
2	BODY CAP		FORGED BRASS (B283, C37700)
	(2 1/2″- 4″)		CAST BRONZE (B584, C84400)
3	STEM	(1)	SPECIAL BRASS (KITZ “K” METAL)
4	BALL	(2)	FORGED BRASS (B283, C37700)
	(2 1/2″- 4″)		CAST BRONZE (B584, C84400)
7	GLAND		BRASS ROD (B16)
8	GLAND PACKING		PTFE
9	HANDLE	(3)	CARBON STEEL
10	HANDLE NUT (2 1/2″)		CARBON STEEL
16	SPRING WASHER		CARBON STEEL
16A	WASHER (3, 4″)		CARBON STEEL
30	BALL SEAT		PTFE
123	HANDLE BOLT (3, 4″)		CARBON STEEL

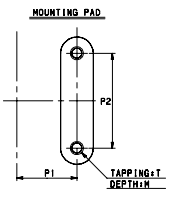
NOTES: (1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	F	APPROX. NET WT.	CARTON QTY
1/4	.39	1.54	3.23	1.61	.50	1.12	.55	48	120
3/8	.39	1.54	3.23	1.65	.50	1.12	.55	49	120
1/2	.59	1.65	3.23	2.01	.50	1.12	.72	52	96
3/4	.79	2.01	3.94	2.32	.87	1.37	.75	50	60
1	.98	2.32	5.12	2.52	.87	1.37	.94	51	36
1 1/4	1.26	2.52	5.12	3.86	.87	1.50	1.26	50	24
1 1/2	1.57	2.87	5.91	4.45	.93	1.50	1.46	54	16
2	1.97	3.15	5.91	4.96	.93	1.50	1.77	72	16
2 1/2	2.56	4.25	7.87	5.31	1.97	-	2.95	17	2
3	2.99	4.80	11.81	6.14	1.97	-	3.37	26	2
4	3.94	5.51	11.81	7.56	1.97	-	4.06	44	2



2 1/2″ - 4″



1/4″ - 2″

T - 10-24 UNC (1/4″- 1″)
T - 1/4-20 UNC (1 1/4″- 2″)
T - 4-M6 (2 1/2″- 4″)

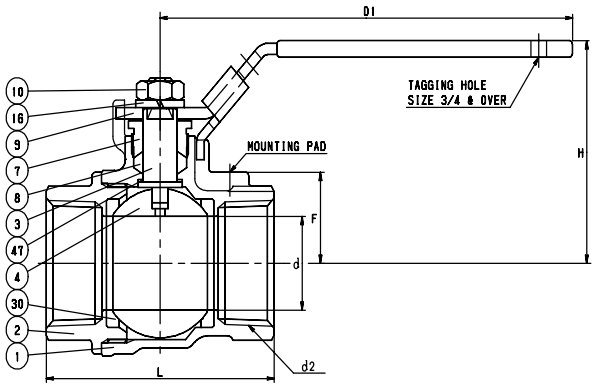
M - .35 (1 1/4″, 2″-4″)
M - .31 (1/4″- 1″, 1 1/2″, 2″)

FORGED BRASS/CAST BRONZE BALL VALVE

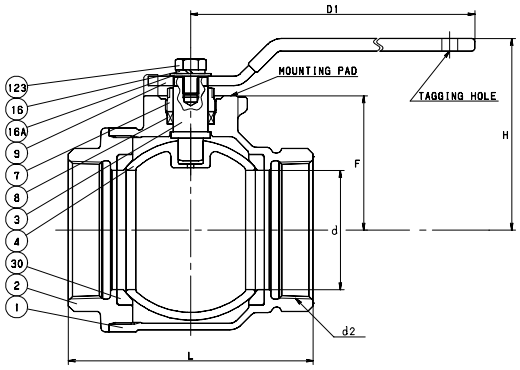
250 WSP STEAM SEATS

Two Piece Body with Mounting Pad • Full Port • Stainless Steel Trim
Blowout Proof Stem • Stainless Steel / Vented Ball • PTFE Seats and Seals • Locking Lever Handle
CSA (US/C) • UL • FM (1/4″ - 2″)**

CODE # 68PM (AKTAFPM)
THREADED



CODE # 68PM (AKTAFPM)
2 1/2″- 4″
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110 - REPLACES US. FED. SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE
250 PSI - SATURATED STEAM TO 366ºF
600 PSI (1/4″-2″) - NON-SHOCK COLD WATER, OIL OR GAS
400 PSI (2 1/2″-4″) - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

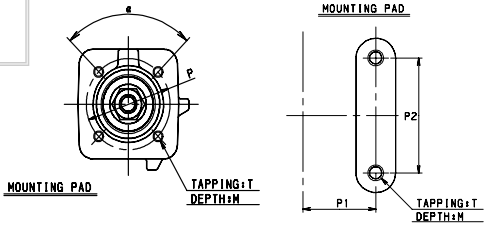
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
	(2 1/2″ - 4″)	CAST BRONZE (B584, C84400)
2	BODY CAP	FORGED BRASS (B283, C37700)
	(2 1/2″ - 4″)	CAST BRONZE (B584, C84400)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL (Vented)	STAINLESS STEEL (A276 TYPE 316 or A351 Gr. CF8M)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	REINFORCED PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
16A	WASHER	CARBON STEEL
30	BALL SEATS	REINFORCED PTFE
47	THRUST WASHER	REINFORCED PTFE
123	HANDLE BOLT	CARBON STEEL

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	F	APPROX. NET WT.	CARTON QTY
1/4	.39	1.54	3.19	1.61	.50	1.12	.55	48	120
3/8	.39	1.54	3.19	1.65	.50	1.12	.55	49	120
1/2	.59	1.65	3.19	2.09	.50	1.12	.72	52	96
3/4	.79	2.01	3.94	2.36	.87	1.37	.75	50	60
1	.98	2.32	5.12	2.83	.87	1.37	.94	51	36
1 1/4	1.26	2.52	5.12	3.23	.93	1.50	1.26	50	24
1 1/2	1.57	2.87	5.91	3.62	.93	1.50	1.46	54	16
2	1.97	3.15	5.91	4.13	.93	1.50	1.77	72	16
2 1/2	2.56	4.25	7.87	5.31	1.97	-	1.97	17	2
3	2.99	4.80	11.81	6.14	1.97	-	1.97	26	2
4	3.94	5.51	11.81	7.56	1.97	-	1.97	44	2



T - 10-24 UNC (1/4″- 1″)
T - 1/4-20 UNC (1 1/4″- 2″)
T - 4-M6 (2 1/2″- 4″)

M - .35 (1 1/4″, 2″-4″)
M - .31 (1/4″- 1″, 1 1/2″, 2″)

SPECIFICATION

Approved valve shall have two piece forged brass or cast bronze body with mounting pad, blowout proof stem, reinforced PTFE seats/seals, stainless steel trim, and full port design with locking handle. Valve sizes 1/4″-2″ shall be pressure rated to 250 WSP/600 WOG and conform to MSS-SP 110 and certified to CSA, UL & FM. Valve sizes 2 1/2″-4″ shall be pressure rated to 250 WSP/400 WOG and conform to MSS-SP 110.

KITZ Code No. 68PM (AKTAFPM) Threaded Ends

**CSA (US/C):
ASME B16.33 – 125G
CGA 3.16-M88 – 125G
UL-125, 842, 1769
FM-1140 – 175 WWP (Fire Protection Systems)

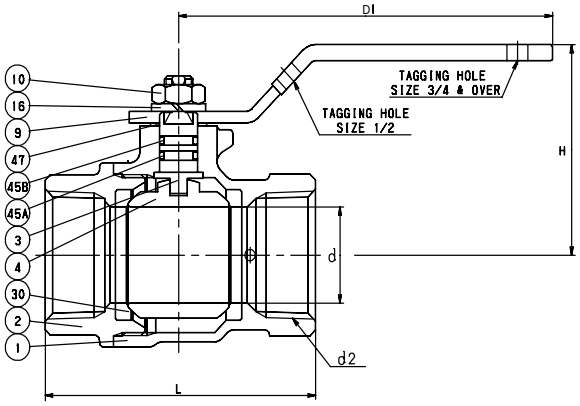
FORGED BRASS BALL VALVE

DRAINABLE

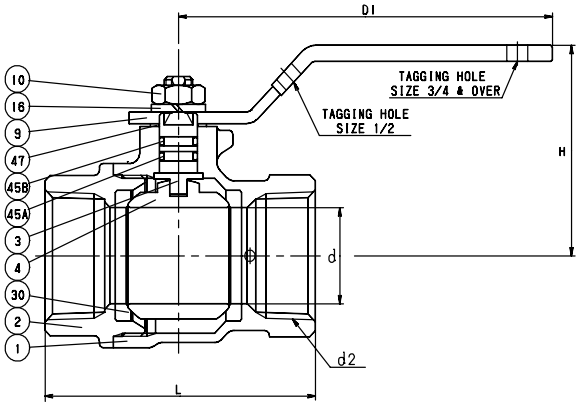
Two Piece Body • Full Port • Chrome Plated Ball

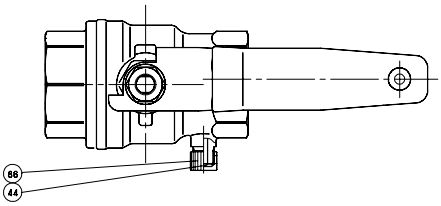
Blowout Proof Stem • PTFE Seats • Maintenance Free Double O-Ring Stem Seals

CODE # 68AD (AKTFD)
THREADED



CODE # 69AD (CTAFD)
SOLDER*





**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have drainable two piece forged brass body, blowout proof stem, PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 600 WOG and conform to MSS-SP 110.

KITZ Code No. 68AD (AKTFD) Threaded Ends
69AD (CTFD) Solder Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
200ºF @ 375 PSI
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ "K-METAL")
4	BALL	(2) FORGED BRASS (B283, C37700)
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
30	BALL SEATS	PTFE
44	DRAIN GASKET	NBR
45A	O-RING	FPM
45B	O-RING	NBR
47	THRUST WASHER	POM
86	DRAIN CAP	BRASS ROD

NOTES: (1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
1/2	.59	1.54	3.23	2.17	1.30	.631	.627	65	96
3/4	.79	1.89	3.94	2.44	1.53	.881	.877	62	60
1	.98	2.17	5.12	2.87	1.80	1.132	1.128	65	36

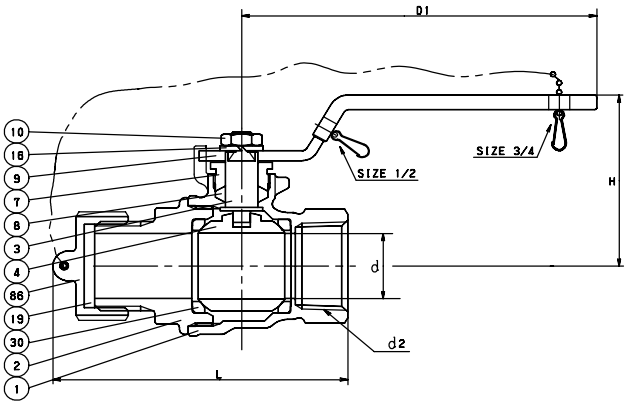
FORGED BRASS BALL VALVE

CAP & CHAIN

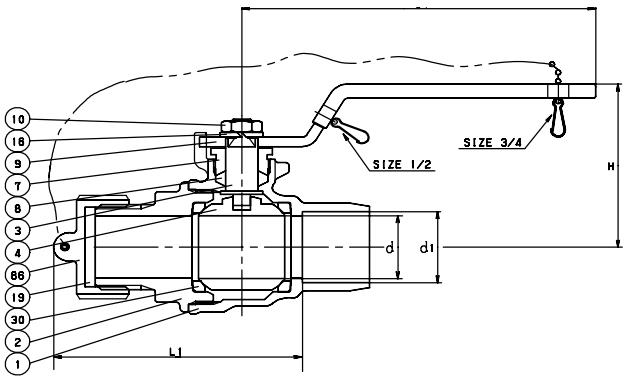
Two Piece Body • Full Port

Blowout Proof Stem • Chrome Plated Ball • PTFE Seats and Seals

CODE # 68C (AKTAFC)
THREADED x HOSE



CODE # 69C (CTAFC)
SOLDER* x HOSE



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1/ANSI B2.4 ¾ 11.5 NHR
SOLDER JOINT ENDS	ANSI B16.18/ANSI B2.4 ¾ 11.5 NHR
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	BRASS ROD (B16)
	(¾″)	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ, "K-METAL")
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
19	GASKET	NBR
30	BALL SEATS	PTFE
86	CAP & CHAIN	PP/BRASS

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min	APPROX. NET WT.	CARTON QTY
1/2	.59	1.65	3.23	2.93	2.46	.631	.627	52	96
3/4	.79	2.01	3.94	3.30	2.79	.881	.877	50	60

SPECIFICATION

Approved valve shall have two piece forged brass body, chrome plated ball, blowout proof stem, PTFE seats/seals, PP or brass cap & chain and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110.

KITZ Code No. 68C (AKTAFC) Threaded Ends
69C (CTAFC) Solder Ends

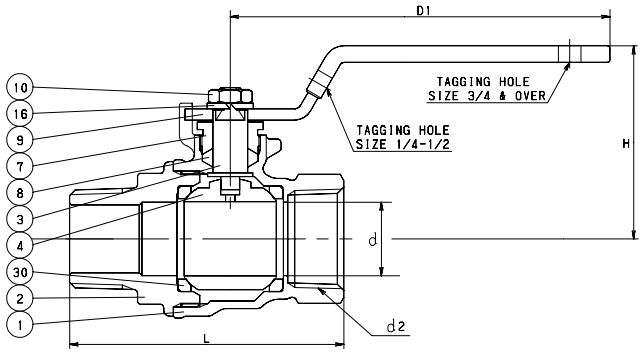
FORGED BRASS BALL VALVE

THREADED/SOLDER x MALE

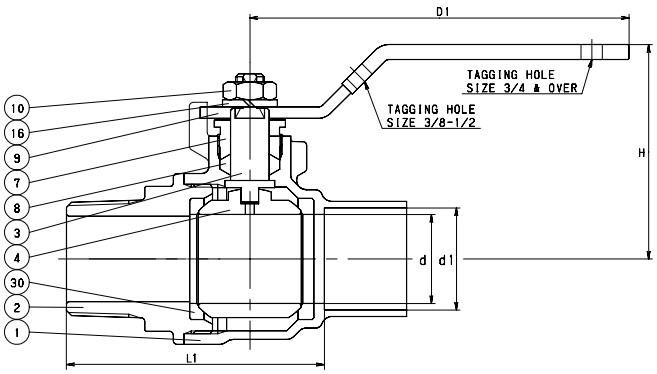
Two Piece Body • Full Port

Chrome Plated Ball • Blowout Proof Stem • PTFE Seats and Seals

CODE # 68O (AKTAFO)
MALE x THREADED



CODE # 69O (CTAFO)
MALE x SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1 / MALE
SOLDER JOINT END	ANSI B16.18 / MALE
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP ($1/4$″ - $3/8$″)	BRASS ROD (B16)
	($1/2$″- 1″)	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ "K METAL")
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	BRASS ROD
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
30	BALL SEATS	PTFE

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
$1/4$	.39	1.54	3.23	2.05	-	.381	.377	48	120
$3/8$	.39	1.54	3.23	2.09	1.75	.506	.502	49	120
$1/2$	.59	1.65	3.23	2.60	2.13	.631	.627	52	96
$3/4$	.79	2.01	3.94	2.87	2.36	.881	.877	50	60
1	.98	2.32	5.12	3.46	2.85	1.132	1.128	51	36

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem, PTFE seats/seals, chrome plated ball, full port design with threaded/solder x male ends. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110.

KITZ Code No. 68O (AKTAFO) Threaded Ends
69O (CTAFO) Soldered Ends

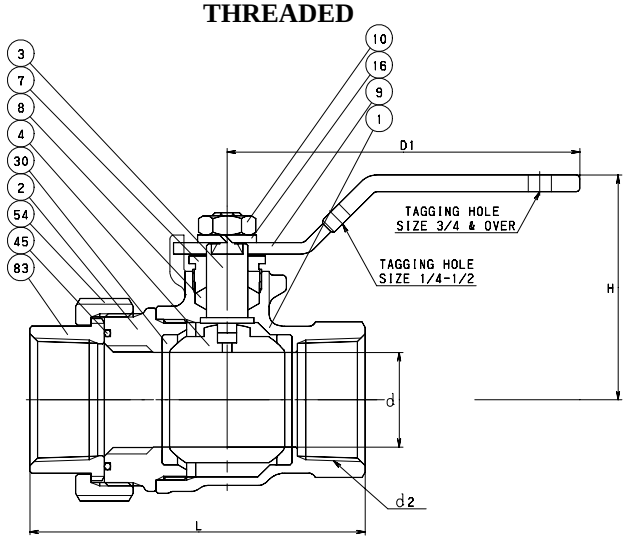
FORGED BRASS BALL VALVE

SINGLE UNION

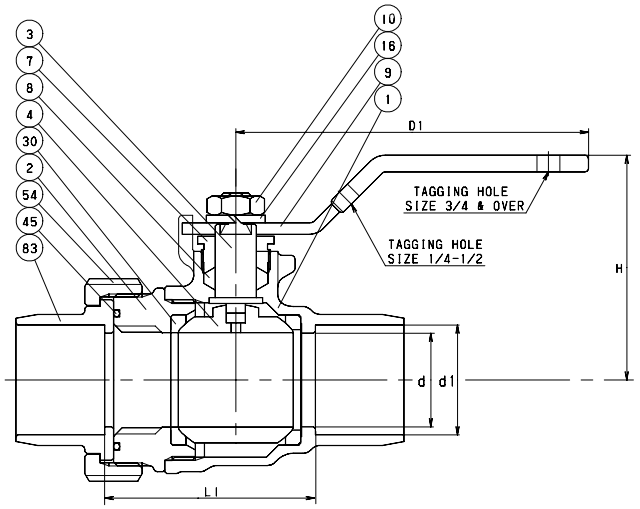
Two Piece Body • Full Port

Blowout Proof Stem • Chrome Plated Ball • PTFE Seats and Seals

CODE # 68U (AKTAFU)
THREADED



CODE # 69U (CTAFU)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass body and single union connection with FPM hand-tight o-ring seal, blowout proof stem, PTFE seats/seals, chrome plated ball, and full port design. Valves shall be pressure rated to 150 PSI @ 300ºF/600 WOG and conform to MSS-SP 110.

KITZ Code No. 68U (AKTAFU) Threaded Ends
69U (CTAFU) Soldered Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI @ 300ºF
600 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ "K-METAL")
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
30	BALL SEAT	PTFE
45	O-RING	FPM
54	UNION NUT	FORGED BRASS (B283, C37700)
83	UNION NIPPLE	FORGED BRASS (B283, C37700)

NOTES: (1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
1/4	.39	1.54	3.23	2.05	-	-	-	50	120
3/8	.39	1.54	3.23	2.05	1.37	.506	.502	50	120
1/2	.59	1.65	3.23	2.48	1.52	.631	.627	60	96
3/4	.79	2.01	3.94	2.95	1.89	.881	.877	66	60
1	.98	2.32	5.12	3.46	2.20	1.132	1.128	60	36
1 1/4	1.26	2.52	5.12	3.86	2.59	1.382	1.378	60	24
1 1/2	1.57	2.87	5.91	4.45	3.10	1.633	1.628	61	16
2	1.97	3.15	5.91	4.96	3.58	2.133	2.128	87	16

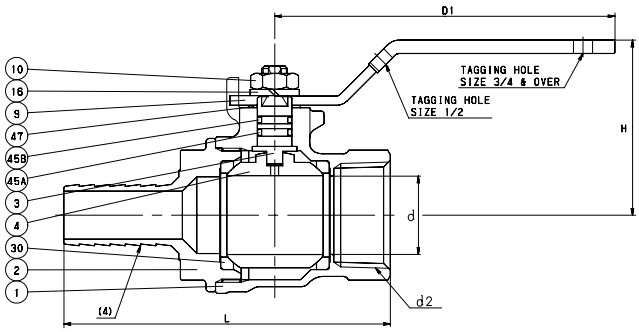
FORGED BRASS BALL VALVE

THREADED x BARBED HOSE CONNECTION

Two Piece Body • Full Port • Chrome Plated Ball

Blowout Proof Stem • PTFE Seats • Maintenance Free Double O-Ring Stem Seals

CODE # 68AB (AKTFB)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1 / BHC
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS *OPERATING LIMITS ARE GOVERNED BY TYPE OF HOSE AND CLAMP USED.*

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ "K-METAL")
4	BALL	(2) FORGED BRASS (B283, C37700)
9	HANDLE	CARBON STEEL
10	HANDLE NUT	(3) CARBON STEEL
16	SPRING WASHER	CARBON STEEL
30	BALL SEATS	PTFE
45A	O-RING	FPM
45B	O-RING	NBR
47	THRUST WASHER	PTFE

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING
(4) BARBED CONNECTOR ACCEPTS STANDARD HOSE I.D. MATCHING VALVE PIPE SIZE.

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	HOSE ID	APPROX. NET WT.	CARTON QTY
1/2	.59	1.54	3.23	2.91	.50	0.50	96
3/4	.79	1.89	3.94	3.35	.63	0.83	60
1	.98	2.17	5.12	4.06	.75	1.42	36

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem, PTFE seats, maintenance free double o-ring stem seals, chrome plated ball, threaded x barbed hose connection and full port design. Valves shall be pressure rated to 600 WOG and conform to MSS-SP 110.

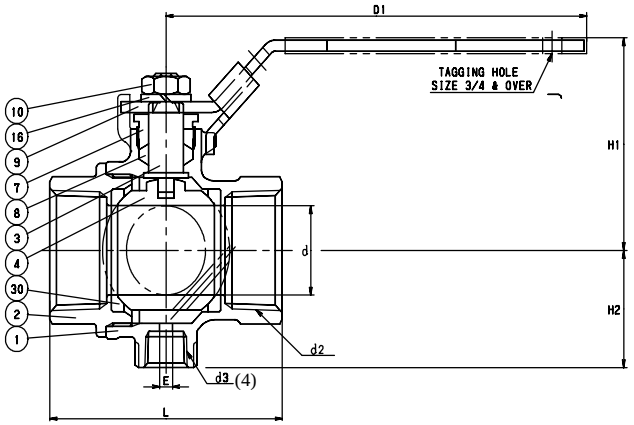
KITZ Code No. 68AB (AKZA) Threaded Ends

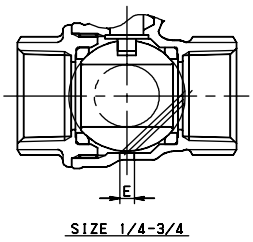
FORGED BRASS BALL VALVE

SAFETY EXHAUST

Two Piece Body • Full Port • Blowout Proof Stem
Chrome Plated Ball • PTFE Seats and Seals • Locking Lever Handle

CODE # 68S (AKTAFS)
THREADED





SIZE 1/4-3/4

STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
200 PSI NON-SHOCK COLD WATER, AIR & WATER

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ "K" METAL)
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
30	BALL SEATS	PTFE

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING
(4) 1/4″ EXHAUST PORT (1″-2″) (d3)
EXHAUST MUFFLER AVAILABLE - OSHA: 1910:147 COMPLIANT

DIMENSIONS - WEIGHTS - QUANTITIES								
d2 SIZE	d	H1	H2	D1	L	E	APPROX. NET WT.	CARTON QTY
1/4	.31	1.54	-	3.23	1.61	.16	48	120
3/8	.31	1.54	-	3.23	1.65	.16	49	120
1/2	.51	1.65	-	3.23	2.09	.16	52	96
3/4	.71	2.01	-	3.94	2.36	.16	50	60
1	.91	2.32	1.28	5.12	2.83	.16	51	36
1 1/4	1.26	2.52	1.50	5.12	3.23	.16	50	24
1 1/2	1.57	2.87	1.73	5.91	3.62	.16	54	16
2	1.97	3.15	2.05	5.91	4.13	.16	72	16

SPECIFICATION

Approved valve shall have two piece forged brass body with safety exhaust, blowout proof stem, PTFE seats/seals, chrome plated ball, and full port design. Valves shall be pressure rated to 200 WOG and conform to MSS-SP 110.

KITZ Code No. 68S (AKTAFS) Threaded Ends

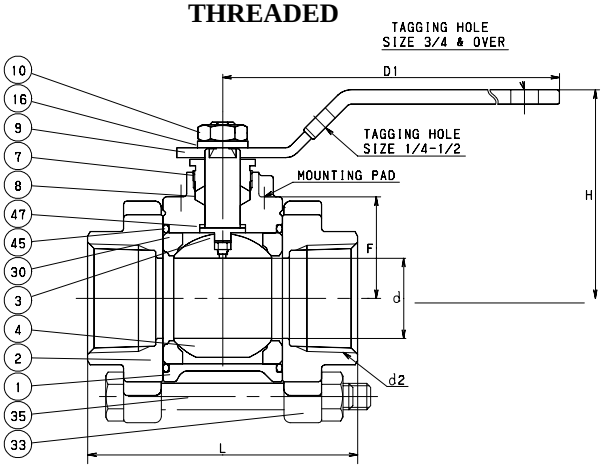
FORGED BRASS/CAST BRONZE BALL VALVE

THREE PIECE BODY WITH MOUNTING PAD

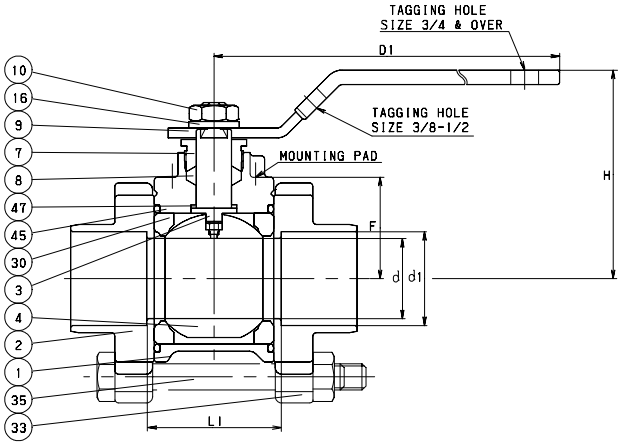
Full Port • Blowout Proof Stem

Chrome Plated Ball • PTFE Seats and Seals

CODE # 62 (AK3TM)
THREADED



CODE # 63 (C3TM)
SOLDER*



STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

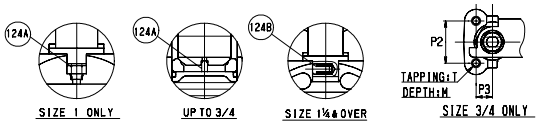
PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART		SPECIFICATION
1	BODY		FORGED BRASS (B283, C37700)
2	CAP		FORGED BRASS (B283, C37700)
3	STEM		SPECIAL BRASS (KITZ "K-METAL")
4	BALL	(1)	FORGED BRASS (B283, C37700)
7	GLAND	(2)	BRASS ROD (B16)
8	GLAND PACKING		PTFE
9	HANDLE		CARBON STEEL
10	HANDLE NUT	(3)	CARBON STEEL
16	SPRING WASHER		CARBON STEEL
30	BALL SEAT		PTFE
33	CAP NUT		CARBON STEEL (A307 Gr. B)
35	CAP BOLT		CARBON STEEL (A307 Gr. B)
45	O-RING		FPM
47	THRUST WASHER		REINFORCED PTFE
124A	SPRING ($1/4$"-1")		STAINLESS STEEL (A313, TYPE 316)
124B	SPRING & PIN ($1\,1/4$"-2")		STAINLESS STEEL (A313 & A276, TYPE 316)

NOTES: (1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

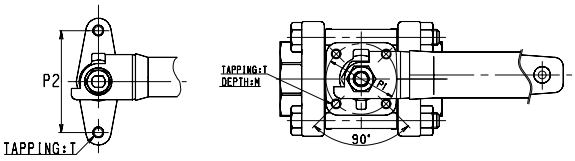
DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	L2	P1/P	P2	P3	F	d1 Max.	d1 Min.	APPROX. NETWT.	CTN QTY.
$1/4$	.39	1.54	3.23	1.93	.96	1.10	-	1.77	-	.75	-	-	42	60
$3/8$	.39	1.54	3.23	1.93	.96	1.10	-	1.77	-	.75	.506	.502	42	60
$1/2$	.59	1.89	3.23	2.40	1.20	-	-	1.77	-	.98	.631	.627	36	36
$3/4$	.79	2.17	3.94	2.76	1.38	1.39	-	.87	.33	1.02	.881	.877	24	24
1	.98	2.48	5.12	3.27	1.63	-	1.42	-	-	1.22	1.132	1.128	32	16
$1\,1/4$	1.26	2.72	5.12	3.90	1.95	-	1.42	-	-	1.46	1.382	1.378	32	8
$1\,1/2$	1.57	3.07	5.91	4.61	2.30	2.30	1.42	-	-	1.77	1.633	1.628	42	6
2	1.97	3.35	5.91	5.47	2.74	-	1.42	-	-	2.05	2.133	2.128	44	4

SPECIFICATION

Approved valve shall have three piece forged brass body, blowout proof stem, PTFE seats/seals, chrome plated ball, and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110.

KITZ Code No. 62 (AK3TM) Threaded Ends
63 (C3TM) Soldered Ends



T - 10-24 UNC ($1/4$"-$3/4$")
M5 (1"-2")

M - .21 ($1/4$", $3/8$")
.22 ($1/2$")
.39 ($3/4$"-2")

FORGED BRASS BALL VALVE

GROOVED ENDS

Three Piece Body with Mounting Pad • Full Port
Blowout Proof Stem • Chrome Plated Ball • PTFE Seats and Seals

CODE # 62G (GJ3TM)
1 1/2″ - 2″
GROOVED

CODE # 62G (GJ3TM)
2 1/2″
GROOVED

STANDARDS	
END TO END	KITZ
GROOVED ENDS	MIL-P-11087
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART		SPECIFICATION
1	BODY		FORGED BRASS (B283, C37700)
	2 1/2″		CAST BRONZE (B584, C84400)
2	CAP		FORGED BRASS (B283, C37700)
3	STEM	(1)	SPECIAL BRASS (KITZ "K-METAL")
4	BALL	(2)	FORGED BRASS (B283, C37700)
7	GLAND		BRASS ROD (B16)
8	GLAND PACKING		PTFE
9	HANDLE	(3)	CARBON STEEL
10	HANDLE NUT		CARBON STEEL
16	SPRING WASHER		CARBON STEEL
30	BALL SEAT		PTFE
33	END NUT		CARBON STEEL (A307 Gr. B)
35	CAP BOLT		CARBON STEEL (A307 Gr. B)
45	O-RING		FPM
47	THRUST WASHER		REINFORCED PTFE
124	SPRING & PIN		STAINLESS STEEL (A313 & A276, TYPE 316)

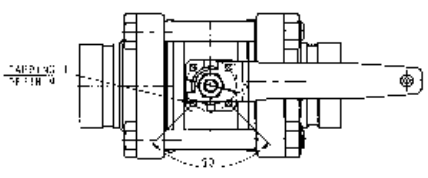
NOTES: (1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PROTECTIVE COATING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	d1	H	D1	L	P	A	B	C	D		APPROX. NET WT	CTN
1 1/2	1.57	1.57	3.07	5.91	6.81	1.42	1.900	.625	.313	1.775	1.77	42	6
2	1.97	2.05	3.35	5.91	7.32	1.42	2.375	.625	.313	2.250	2.05		
2 1/2	2.56	2.46	4.25	7.87	8.78	1.97	2.875	.625	.313	2.720	3.01	48	4

T - M5 (1 1/2″ - 2″)
M6 (2 1/2″)

M - .39 (1 1/2″ - 2″)
.35 (2 1/2″)



SPECIFICATION

Approved valve shall have three piece forged brass body with mounting pad, blowout proof stem, PTFE seats/seals, chrome plated ball, and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110.

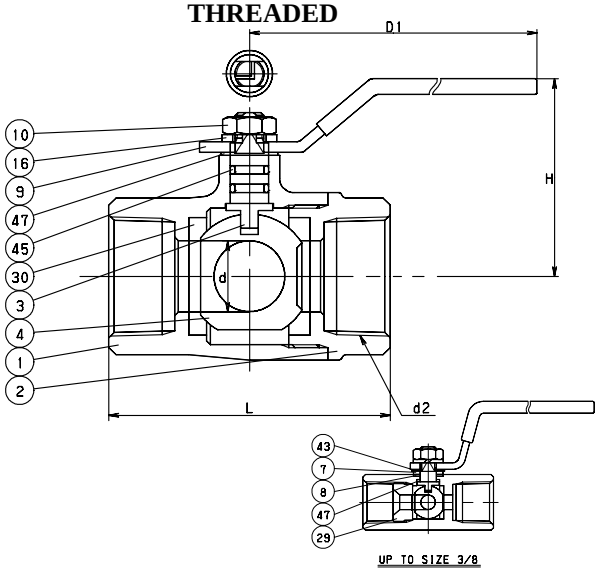
KITZ Code No. 62G (GJ3TM) Grooved Ends

FORGED BRASS BALL VALVE

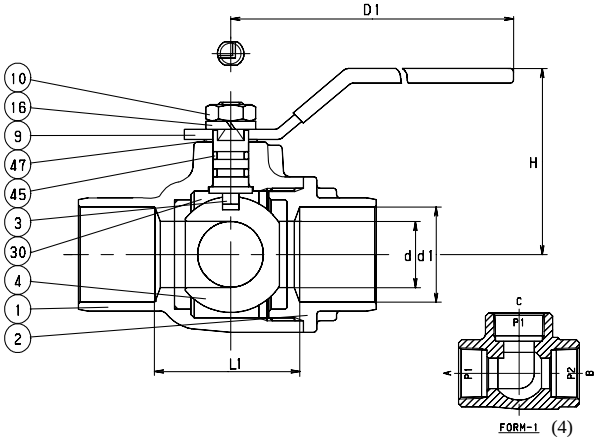
THREE WAY

Two Piece Body • Maintenance Free Double O-Ring Stem Seals • L-Port Design
Chrome Plated Ball • PTFE Seats • Blowout Proof Stem

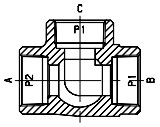
CODE # 54 (AKTN)
1/4″ - 3/8″ / 2 1/2″ - 3″
THREADED



CODE # 55 (CTN)
1 1/4″ - 2″
SOLDER*



FORM-1 (4)



FORM-2 (5)

**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have three way two piece forged brass body, blowout proof stem, PTFE seats, maintenance free double o-ring stem seals, chrome plated ball, and L-port design. Valves shall be pressure rated to 150 PSI @ 300ºF/400 WOG.

KITZ Code No. 54 (AKTN) Threaded Ends
55 (CTN) Soldered Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
150 PSI @ 300º F
400 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
	(2 1/2″-3″)	CAST BRONZE
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ, K-METAL)
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	STAINLESS STEEL (A276, TYPE 430)
8	GLAND PACKING	G/F PTFE
9	HANDLE	(3) STAINLESS STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
29	INSERT	FORGED BRASS (B124, C37700)
30	BALL SEAT	PTFE
43	SPRING	STAINLESS STEEL (A276, TYPE 304)
45	O-RINGS	FPM
47	THRUST WASHER(1/4″-3/8″)	REINFORCED PTFE
	(1 1/4″-3″)	POM

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL
(2) CR. PLATING
(3) WITH PLASTIC COVERING
(4) FLOW IS FACILITATED BETWEEN “A” & “C” AFTER EXTENDED USE, PORT “B” MAY LEAK SLIGHTLY TO PORT “A” & “C” IF PRESSURE IN P2 IS HIGHER THAN P1.
(5) FLOW IS FACILITATED BETWEEN “C” & “B” AFTER EXTENDED USE, PORT “A” MAY LEAK SLIGHTLY TO PORT “B” & “C”, IF PRESSURE IN P2 IS HIGHER THAN P1

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
1/4	.18	1.18	2.36	1.57	-	-	-	22	120
3/8	.27	1.77	3.15	1.81	-	-	-	44	120
1 1/4	.98	2.36	5.12	-	1.99	1.132	1.128	67	24
1 1/2	1.26	2.56	5.12	-	2.32	1.382	1.378	62	16
2	1.57	2.95	5.90	-	2.81	1.633	1.628	72	12
2 1/2	1.97	3.58	7.87	5.43	-	-	-	71	6
3	2.56	4.13	11.81	6.54	-	-	-	74	4

FORGED BRASS BALL VALVE

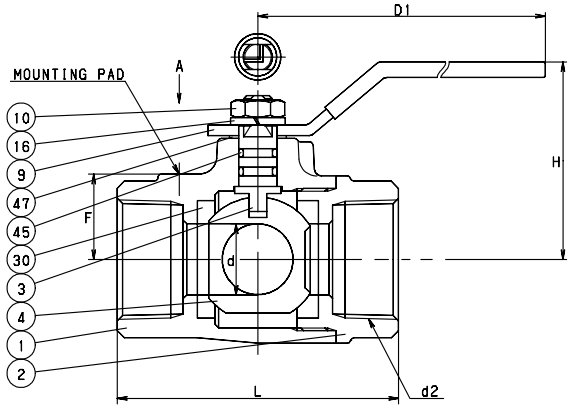
THREE WAY

Two Piece Body with Mounting Pad • Maintenance Free Double O-Ring Stem Seals
L-Port Design • Blowout Proof Stem • Chrome Plated Ball • PTFE Seats

CODE # 54P (AKTNP)

1/2″ - 2″

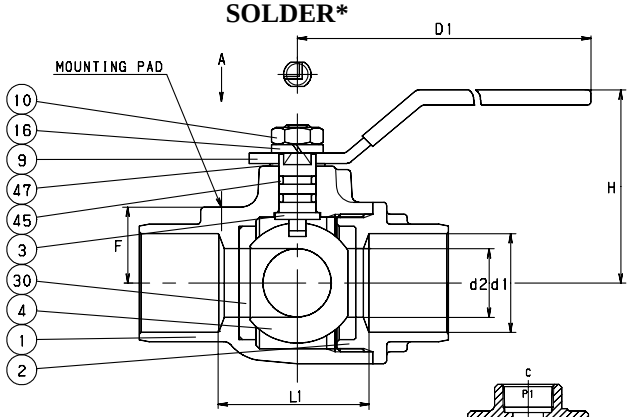
THREADED

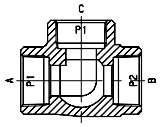


CODE # 55P (CTNP)

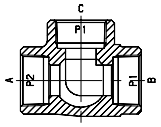
1/2″ - 1″

SOLDER*





(4)



(5)

**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
150PSI @ 300º F
400 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

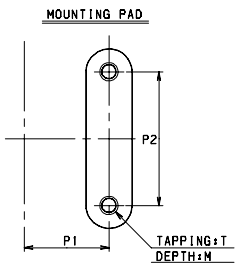
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ, K-METAL)
4	BALL	(2) FORGED BRASS (B283, C37700)
9	HANDLE	(3) STAINLESS STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
30	BALL SEAT	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	POM

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL
(2) CR. PLATING
(3) WITH PLASTIC COVERING
(4) FLOW IS FACILITATED BETWEEN “A” & “C” AFTER EXTENDED USE, PORT “B” MAY LEAK SLIGHTLY TO PORT “A” & “C” IF PRESSURE IN P2 IS HIGHER THAN P1.
(5) FLOW IS FACILITATED BETWEEN “C” & “B” AFTER EXTENDED USE, PORT “A” MAY LEAK SLIGHTLY TO PORT “B” & “C”, IF PRESSURE IN P2 IS HIGHER THAN P1

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	P1	P2	F	d1 Max.	d1 Min.	APPROX. NET WT.	CTN QTY
1/2	.39	1.77	3.94	2.64	1.32	.50	1.12	.59	.631	.627	59	60
3/4	.59	1.89	3.94	2.68	1.34	.87	1.37	.72	.881	.877	63	48
1	.79	2.17	5.12	3.11	1.56	.87	1.37	.87	1.132	1.128	64	32
1 1/4	.98	2.36	5.12	3.50	-	.93	1.50	1.05	-	-	67	24
1 1/2	1.26	2.56	5.12	3.94	-	.93	1.50	1.22	-	-	62	16
2	1.57	2.95	5.91	4.53	-	.93	1.50	1.77	-	-	72	12



T - 10-24 UNC (1/2″-1″)
1/4-24 UNC (1 1/4″-2″)

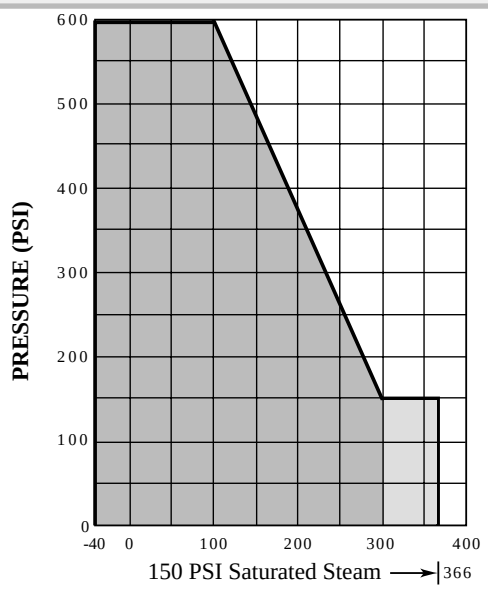
M - .31 (1/2″-2″)

SPECIFICATION

Approved valve shall have three way two piece forged brass body, blowout proof stem, PTFE seats, maintenance free double o-ring stem seals, chrome plated ball, and L-port port design. Valves shall be pressure rated to 150 PSI @ 300ºF/400 WOG.

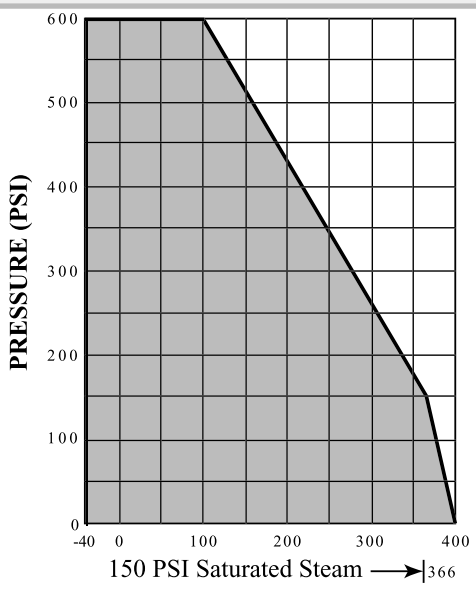
KITZ Code No. 54P (AKTNP) Threaded Ends
55P (CTNP) Soldered Ends

PRESSURE/TEMPERATURE CHART
BRASS/BRONZE BALL VALVES

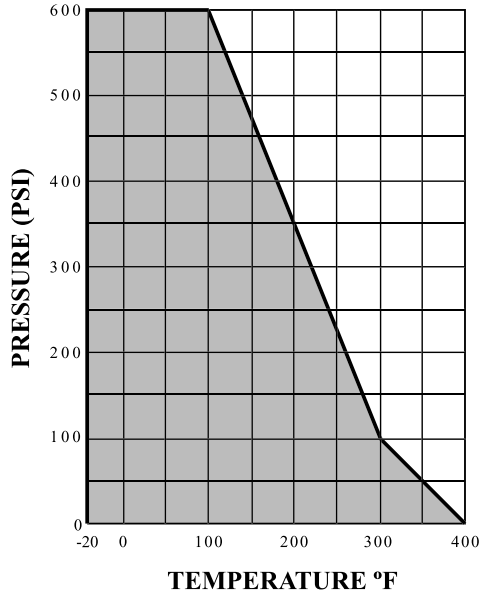


CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP 250 PSI	SATURATED STEAM
58/59, 58/59W	-40 ~ 100ºF	300ºF	366ºF
58/59N, 58/59NW	-40 ~ 100ºF	300ºF	366ºF
68AM	-40 ~ 100ºF	300ºF	-

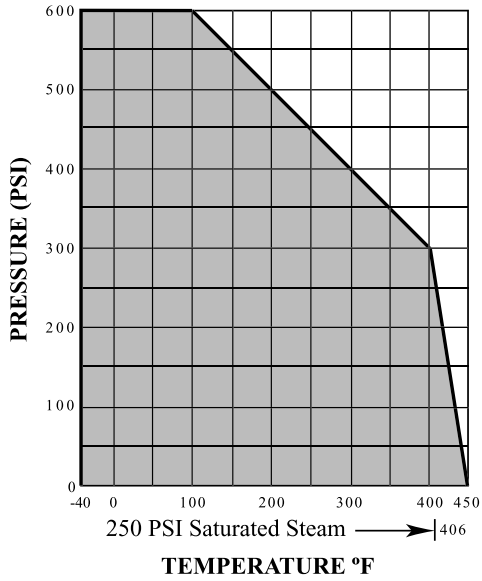
***ADVISORY NOTE:**
Please be advised that applications in the lightly shaded zone will reduce the service life of the valve.



CODE #		WATER, OIL, GAS 600 PSI	MAX. TEMP. 150 PSI	SATURATED STEAM
51		-40 ~ 100ºF	300ºF	366ºF
62/63		-40 ~ 100ºF	300ºF	366ºF
68/69		-40 ~ 100ºF	300ºF	366ºF
68C/69C		-40 ~ 100ºF	300ºF	366ºF
68M		-40 ~ 100ºF	300ºF	366ºF
68P		-40 ~ 100ºF	300ºF	366ºF
68/69O		-40 ~ 100ºF	300ºF	366ºF
68/69AD	Max. Service Range	-40 ~ 100ºF	375 PSI/200ºF	-
68AB		-	375 PSI/100ºF	-
68/69U		0 ~ 100ºF	200 PSI/200ºF	-
68S		0 ~ 100ºF	200 PSI/200ºF	-



CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP. 100 PSI	SATURATED STEAM
56/57	-20 ~ 100ºF	300ºF	-
54/55	-20 ~ 100ºF	300ºF	-
54P/55P	-20 ~ 100ºF	300ºF	-



CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP. 300 PSI	SATURATED STEAM
62M	-40 ~ 100ºF	400ºF	406ºF
68PM	-40 ~ 100ºF	400ºF	406ºF

CARBON STEEL BALL VALVE ILLUSTRATED INDEX

NUMERICAL INDEX

150 WSP/600 WOG
One Piece, Reduced Port
SS Trim

AKSCTK Code # 50
Size 1/4″-2″
(Threaded)

2000/1500 WOG
One Piece, Reduced Port
SS Trim, API 607, NACE

AKSCTKZM-FSO
Code # 119-LOH
Size 1/4″-1″
(Threaded)

AKSCTKZM-FS
Code # 119
Size 1 1/4″-2″
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Mounting Pad, SS Trim

AKSCTAHM
Code # 49M
Size 1/4″-2″
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Mounting Pad, SS Trim, NACE

AKSCTHZM-O
Code # 217-LOH
Size 1/4″-1″
(Threaded)

AKSCTHZM
Code # 217
Size 1 1/4″-2″
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
SS Trim, Mounting Pad
API 607, NACE

AKSCTHZM-FSO
Code # 219-LOH
Size 1/4″ -1″
(Threaded)

AKSCTHZM-FS
Code # 219
Size 1 1/4″ -2″
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
SS Trim, Mounting Pad
Seal Welded, NACE

AKSCTHWZM-O
Code # 237-LOH
Size 1/4″ -1″
(Threaded)

AKSCTHWZM
Code # 237
Size 1 1/4″ -2″
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
SS Trim, Mounting Pad
Seal Welded, API 607, NACE

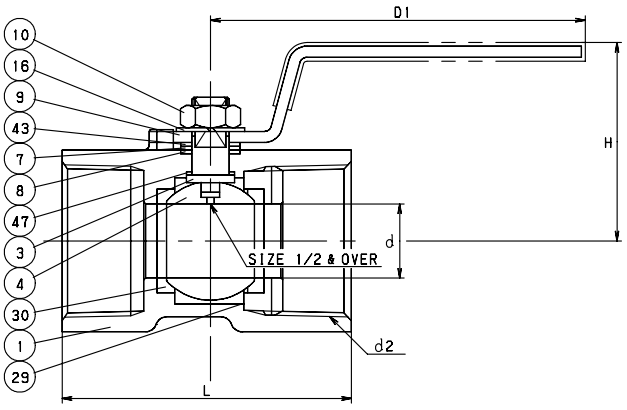
AKSCTHWZM-FSO
Code # 239-LOH
Size 1/4″ -1″
(Threaded)

AKSCTHWZM-FS
Code # 239
Size 1 1/4″-2″
(Threaded)

CARBON STEEL BALL VALVE

One Piece Body • Reduced Port
G/F + PTFE Seats/Seals • Blowout Proof Stem
316 Stainless Steel Trim • Stainless Steel Lever Handle

CODE # 50 (AKSCTK)
THREADED



STANDARDS	
END TO END	KITZ
THREADED ENDS	ASME B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF 600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-38

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	(1) CAST STEEL (A216 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 316)
8	GLAND PACKING	G/F PTFE
9	HANDLE	(2) STAINLESS STEEL (A276 TYPE 430)
10	SELF LOCKING NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
29	INSERT	STAINLESS STEEL (A276 TYPE 316 or A351 Gr. CF8M)
30	BALL SEATS	G/F PTFE
43	SPRING	STAINLESS STEEL (A167 TYPE 304)
47	THRUST WASHER	REINFORCED PTFE

NOTES: (1) PHOSPHATING
(2) WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
1/4	.18	1.22	2.36	1.54	22	120
3/8	.28	1.42	2.76	1.73	26	120
1/2	.36	1.61	3.35	2.22	51	120
3/4	.49	1.73	3.35	2.32	61	96
1	.63	1.89	3.94	2.80	54	54
1 1/4	.79	2.13	2.94	3.07	52	32
1 1/2	.96	2.56	4.92	3.27	47	24
2	1.26	4.92	3.94	3.94	52	16

SPECIFICATION

Approved valve shall have one piece carbon steel body, blowout proof stem, R-PTFE seats/seals, stainless steel trim, stainless steel lever handle and reduced port design. Valves shall be pressure rated to 150 WSP/600 WOG.

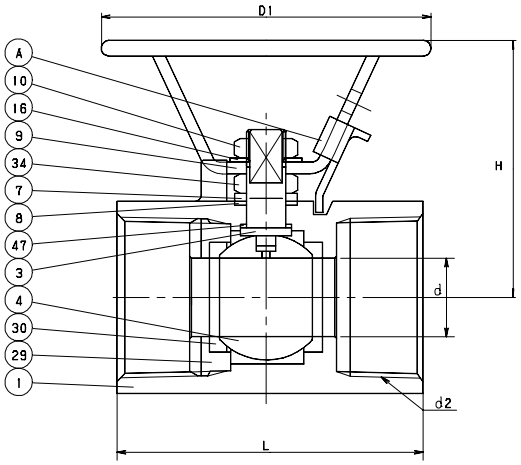
KITZ Code No. 50 (AKSCTK) Threaded Ends

CARBON STEEL BALL VALVE

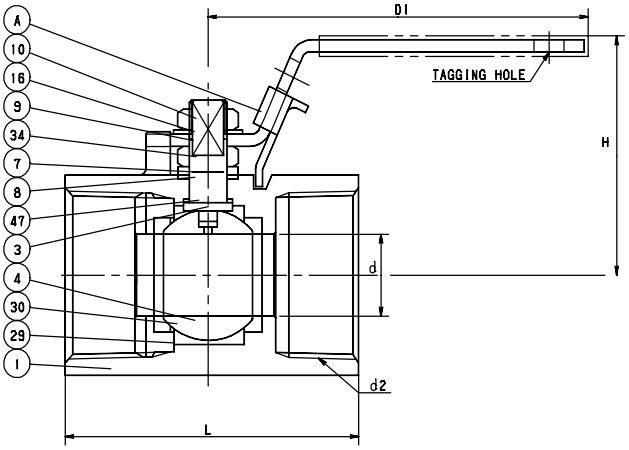
FIRE SAFE (API 607)

One Piece Body with Mounting Pad • 316 Stainless Steel Trim
Reduced Port • Blowout Proof Stem • NACE

CODE # 119-LOH (AKSCTKZM-FSO)
LOCKING OVAL HANDLE (1/4″-1″)
THREADED



CODE # 119 (AKSCTKZM-FS)
LOCKING LEVER HANDLE (1 1/4″-2″)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE	
(1/4″-1″)	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4″-2″)	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-38

MATERIAL LIST

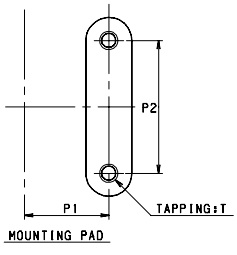
NO.	NAME OF PART		SPECIFICATION
1	BODY		CAST STEEL (A216 Gr. WCB)
3	STEM		STAINLESS STEEL (A276 TYPE 316)
4	BALL		STAINLESS STEEL (A276 TYPE 316)
7	GLAND		STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING		FLEXIBLE GRAPHITE
9	HANDLE	(1)	CARBON STEEL
10	NUT		STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/4″, 3/8″, 1″-2″)		STAINLESS STEEL (A276 TYPE 304)
29	INSERT		CAST STEEL (A216 Gr. WCB or CARBON STEEL (A105)
30	BALL SEATS		HYPATITE PTFE
34	NUT (1/2″-2″)		STAINLESS STEEL (A194 Gr. 8)
47	THRUST WASHER		G/F PTFE
A	LATCH LOCK (1/2″-2″)		STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	APPROX. NET WT.	CARTON QTY
1/4	.18	1.69	3.94	1.97	-	-	16	24
3/8	.27	1.85	3.94	2.05	-	-	16	24
1/2	.36	2.13	3.94	2.56	.50	1.12	20	24
3/4	.49	2.24	3.94	2.76	.57	1.37	26	24
1	.59	2.36	3.94	3.15	.87	1.37	34	24
1 1/4	.79	2.52	4.33	3.74	1	1.5	58	30
1 1/2	.98	2.68	5.51	3.94	1	1.5	51	18
2	1.26	2.95	5.51	4.49	1	1.5	4	10

T - 10-24 UNC (1/4″-1″)
1/4-24 UNC (1 1/4″-2″)



SPECIFICATION

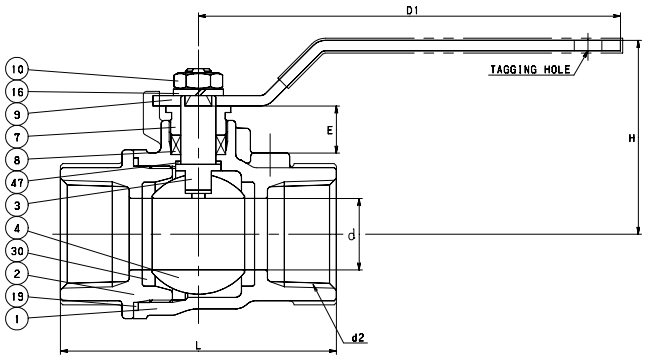
Approved valve shall have one piece carbon steel body with mounting pad, blowout proof stem, PTFE seats/seals, stainless steel trim, and reduced port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4″-1″) and 1500 WOG with locking lever handle (1 1/4″-2″).

KITZ Code No. 119-LOH (AKSCTKZM-FSO)
119 (AKSCTKZM-FS)

CARBON STEEL BALL VALVE

Two Piece Body with Mounting Pad • 316 Stainless Steel Trim
Regular Port • Blowout Proof Stem • Locking Lever Handle

CODE # 49M (AKSCTAHM)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
125 PSI - SATURATED STEAM TO 353ºF
2000 PSI (1/4″-1″) - NON-SHOCK COLD WATER, OIL OR GAS
1500 PSI (1 1/4″-2″) - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-38

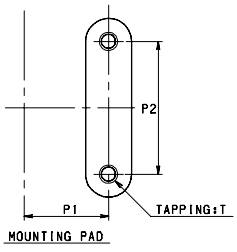
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	(1) CAST STEEL (A276 Gr. WCB)
2	BODY CAP	(1) CAST STEEL (A276 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
	(2″)	STAINLESS STEEL (A351 Gr. CF8M)
7	GLAND	STAINLESS STEEL (A276 TYPE304)
8	GLAND PACKING	PTFE
9	HANDLE	(2) CARBON STEEL
10	HANDLE NUT	(3) CARBON STEEL
16	WASHER	(3) CARBON STEEL
19	GASKET	PTFE
30	BALL SEAT	PTFE
47	THRUST WASHER	G/F PTFE

NOTES: (1) PHOSPHATING
(2) ELECTROPLATED ZINC WITH PLASTIC COVERING
(3) ZN. PLATING
OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	E	APPROX. NET WT.	CARTON QTY
1/4	.37	1.89	3.94	2.05	.50	1.12	.57	49	80
3/8	.37	1.89	3.94	2.05	.50	1.12	.57	46	80
1/2	.49	1.93	3.94	2.24	.50	1.12	.57	40	60
3/4	.69	2.20	5.12	2.99	.87	1.37	.57	60	48
1	.87	2.32	5.12	3.35	.87	1.37	.57	54	32
1 1/4	.98	2.60	5.91	4.02	.93	1.50	.59	41	16
1 1/2	1.26	2.80	5.91	4.37	.93	1.50	.59	45	12
2	1.57	3.39	7.87	5.51	.93	1.50	.59	40	6



T - 10-24 UNC (1/4″-1″)
1/4-20 UNC (1 1/4″-2″)

SPECIFICATION

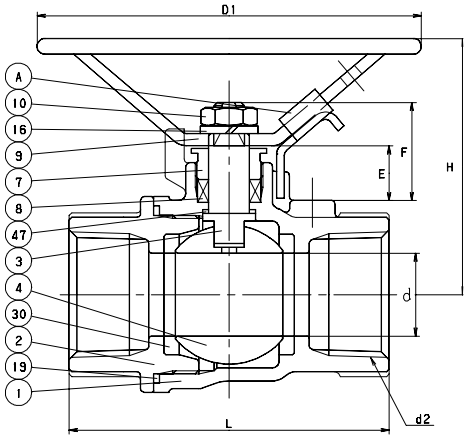
Approved valve shall have two piece carbon steel body, blowout proof stem, PTFE seats/seals, stainless steel trim, locking lever handle and regular port design. Valves shall be pressure rated to 2000 WOG (1/4″-1″) and 1500 WOG (1 1/4″-2″).

KITZ Code No.49M (AKSCTAHM) Threaded Ends

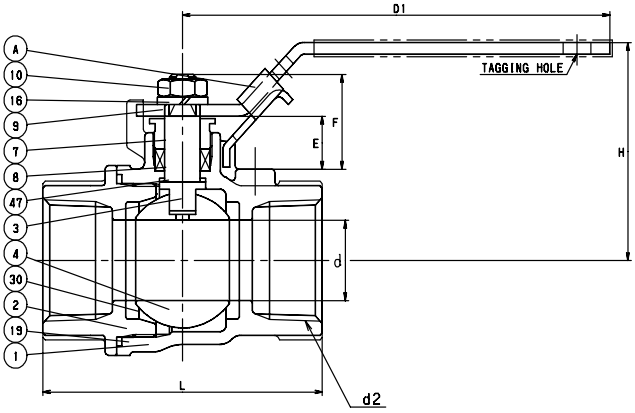
CARBON STEEL BALL VALVE

Two Piece Body with Mounting Pad • 316 Stainless Steel Trim
Regular Port • Blowout Proof Stem • NACE

CODE # 217-LOH (AKSCTHZM-O)
LOCKING OVAL HANDLE (1/4″-1″)
THREADED



CODE # 217 (AKSCTHZM)
LOCKING LEVER HANDLE (1 1/4″-2″)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	BS 5351 CLASS 800 (1/4″-1″)
	ASME B16.34 CLASS 600 (1 1/4″-2″)

PRESSURE/TEMPERATURE	
(1/4″-1″)	240 PSI - SATURATED STEAM TO 403ºF
	2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4″-2″)	220 PSI - SATURATED STEAM TO 395ºF
	1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-38

MATERIAL LIST

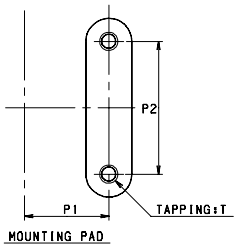
NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST STEEL (A216 Gr. WCB)
2	BODY CAP	CAST STEEL (A216 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2″-2″)	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	PTFE
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CTN QTY.
1/4	.38	2.24	3.94	2.08	0.5	1.12	.394	.728	17	24
3/8	.46	2.24	3.94	2.08	0.5	1.12	.425	.760	17	24
1/2	.50	2.45	3.94	2.40	0.5	1.12	.524	.957	16	18
3/4	.59	2.51	3.94	2.71	0.87	1.37	.496	.929	22	18
1	.78	2.63	3.94	3.25	0.87	1.37	.618	1.189	25	12
1 1/4	1.00	2.65	5.31	3.54	0.93	1.5	.614	1.185	66	30
1 1/2	1.26	3.40	6.14	4.13	0.93	1.5	.858	1.449	58	16
2	1.50	3.64	7.48	4.61	0.93	1.5	.831	1.421	68	12

T - 10-24 UNC (1/4″-1″)
1/4-20 UNC (1 1/4″-2″)



SPECIFICATION

Approved valve shall have two piece carbon steel body with mounting pad, blowout proof stem, hypatite PTFE seats/seals, stainless steel trim,and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4″-1″) and 1500 WOG with locking lever handle (1 1/4″-2″).

KITZ Code No. 217-LOH (AKSCTHZM-O)
217 (AKSCTHZM)

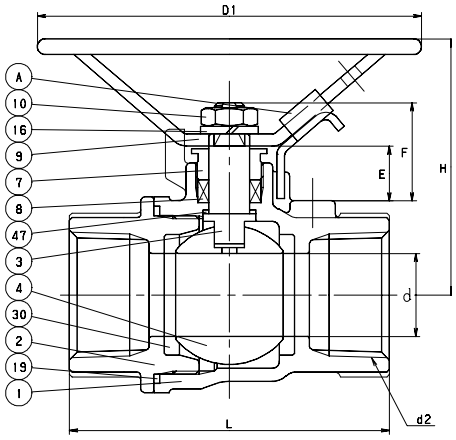
CARBON STEEL BALL VALVE

FIRE SAFE (API 607)

Two Piece Body with Mounting Pad • 316 Stainless Steel Trim
Regular Port • Blowout Proof Stem • NACE

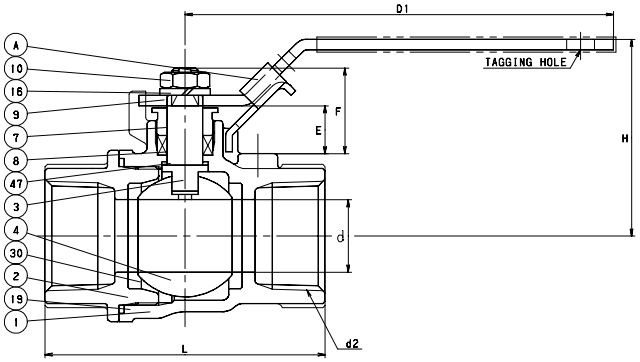
CODE # 219-LOH (AKSCTHZM-FSO)

LOCKING OVAL HANDLE (1/4″-1″)
THREADED



CODE # 219 (AKSCTHZM-FS)

LOCKING LEVER HANDLE (1 1/4″-2″)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
WALL THICKNESS	BS 5351 CLASS 800 (1/4″-1″)
	ASME B16.34 CLASS 600 (1 1/4″-2″)

PRESSURE/TEMPERATURE	
(1/4″-1″)	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4″-2″)	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-38

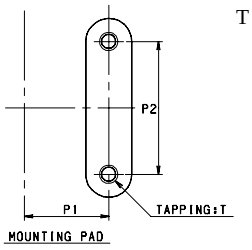
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST STEEL (A216 Gr. WCB)
2	BODY CAP	CAST STEEL (A216 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	FLEXIBLE GRAPHITE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	STAINLESS STEEL (A194 GR. 8)
16	WASHER (1/2″-2″)	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	FLEXIBLE GRAPHITE
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CTN QTY.
1/4	.38	2.24	3.94	2.08	0.5	1.12	.394	.728	17	24
3/8	.46	2.24	3.94	2.08	0.5	1.12	.425	.760	17	24
1/2	.50	2.45	3.94	2.40	0.5	1.12	.524	.957	16	18
3/4	.59	2.51	3.94	2.71	0.87	1.37	.496	.929	22	18
1	.78	2.63	3.94	3.25	0.87	1.37	.618	1.189	25	12
1 1/4	1.00	2.81	3.94	3.54	0.93	1.5	.614	1.185	66	30
1 1/2	1.26	3.81	5.12	4.13	0.93	1.5	.858	1.449	58	16
2	1.50	4.03	5.12	4.61	0.93	1.5	.831	1.421	68	12



T - 10-24 UNC (1/4″-1″)
1/4-20 UNC (1 1/4″-2″)

SPECIFICATION

Approved valve shall have two piece carbon steel body with mounting pad, blowout proof stem, hypatite PTFE seats/ seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4″-1″) and 1500 WOG with locking lever handle (1 1/4″-2″).

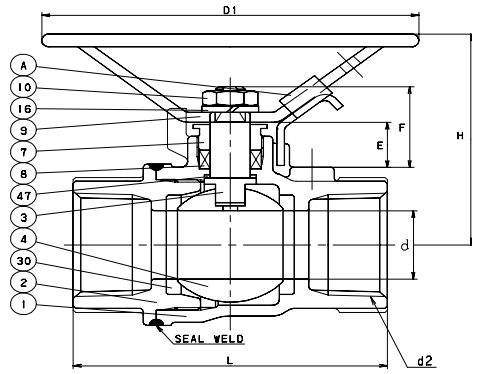
KITZ Code No. 219-LOH (AKSCTHZM-FSO)
219 (AKSCTHZM-FS)

CARBON STEEL BALL VALVE

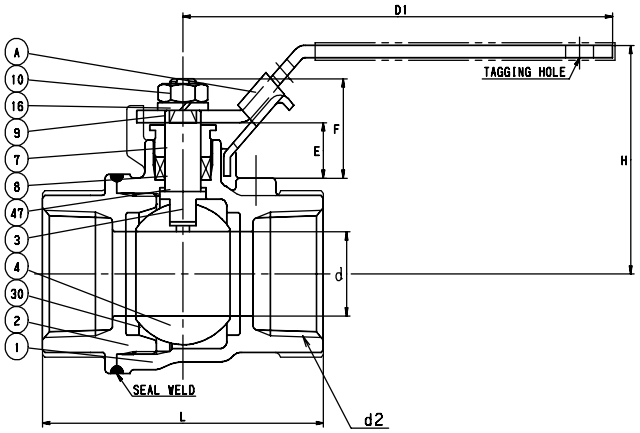
SEAL WELDED

Two Piece Body with Mounting Pad • 316 Stainless Steel Trim
Regular Port • Blowout Proof Stem • NACE

CODE # 237-LOH (AKSCTHWZM-O)
LOCKING OVAL HANDLE (1/4″-1″)
THREADED



CODE # 237 (AKSCTHWZM)
LOCKING LEVER HANDLE (1 1/4″-2″)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	BS 5351 CLASS 800 (1/4″-1″)
	ASME B16.34 CLASS 600 (1 1/4″-2″)

PRESSURE/TEMPERATURE	
(1/4″-1″)	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4″-2″)	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-38

MATERIAL LIST

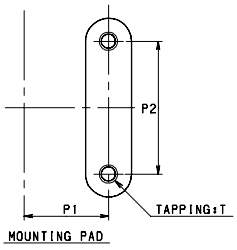
NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST STEEL (A216 Gr. WCB)
2	BODY CAP	CAST STEEL (A216 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2″-2″)	STAINLESS STEEL (A276 TYPE 304)
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	APPROX. NET WT.	CARTON QTY
1/4	.38	2.24	3.94	2.08	0.5	1.12	17	24
3/8	.46	2.24	3.94	2.08	0.5	1.12	17	24
1/2	.50	2.45	3.94	2.40	0.5	1.12	16	18
3/4	.59	2.51	3.94	2.71	0.87	1.37	22	18
1	.78	2.63	3.94	3.25	0.87	1.37	25	12
1 1/4	1.00	2.65	5.31	3.54	0.93	1.5	66	30
1 1/2	1.26	3.40	6.14	4.13	0.93	1.5	58	16
2	1.50	3.64	7.48	4.61	0.93	1.5	68	12

T - 10-24 UNC (1/4″-1″)
1/4-20 UNC (1 1/4″-2″)



SPECIFICATION

Approved valve shall have two piece seal welded carbon steel body, blowout proof stem, hypatite PTFE seats/ seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4″-1″) and 1500 WOG with locking lever handle (1 1/4″-2″).

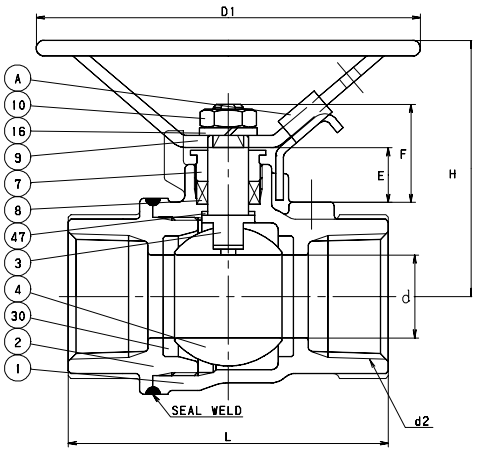
KITZ Code No. 237-LOH (AKSCTHWZM-O)
237 (AKSCTHWZM)

CARBON STEEL BALL VALVE

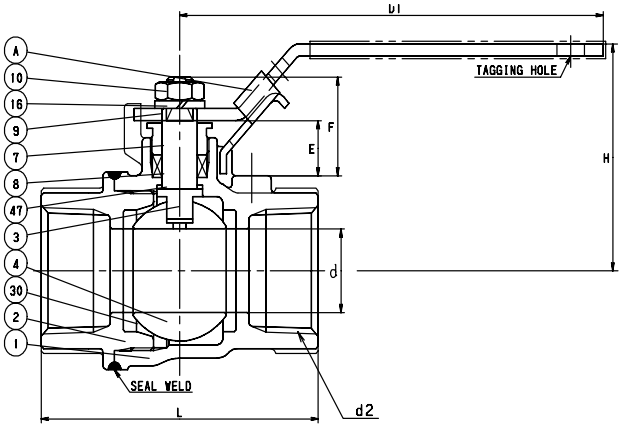
SEAL WELD/FIRE SAFE (API 607)

Two Piece Body with Mounting Pad • 316 Stainless Steel Trim
Regular Port • Blowout Proof Stem • NACE

CODE # 239-LOH (AKSCTHWZM-FSO)
LOCKING OVAL HANDLE (1/4″-1″)
THREADED



CODE # 239 (AKSCTHWZM-FS)
LOCKING LEVER HANDLE (1 1/4″-2″)
THREADED



SPECIFICATION

Approved valve shall have two piece seal welded carbon steel body with mounting pad, blowout proof stem, hypatite PTFE seats/ seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4″-1″) and 1500 WOG with locking lever handle (1 1/4″-2″).

KITZ Code No. 239-LOH (AKSCTHWZM-FSO)
239 (AKSCTHWZM-FS)

STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	BS 5351 CLASS 800 (1/4″-1″)
	ASME B16.34 CLASS 600 (1 1/4″-2″)

PRESSURE/TEMPERATURE	
(1/4″-1″)	240 PSI - SATURATED STEAM TO 403ºF
	2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4″-2″)	220 PSI - SATURATED STEAM TO 395ºF
	1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-38

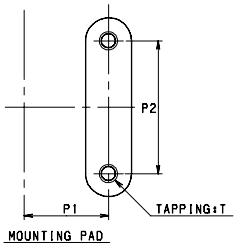
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST STEEL (A216 Gr. WCB)
2	BODY CAP	CAST STEEL (A216 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2″-2″)	STAINLESS STEEL (A276 TYPE 304)
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

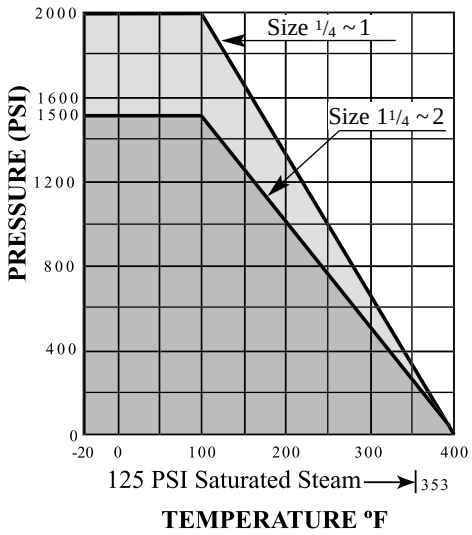
DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CTN QTY
1/4	.38	2.24	3.94	2.08	0.5	1.12	.394	.728	17	24
3/8	.46	2.24	3.94	2.08	0.5	1.12	.425	.760	17	24
1/2	.50	2.45	3.94	2.40	0.5	1.12	.524	.957	16	18
3/4	.59	2.51	3.94	2.71	0.87	1.37	.496	.929	22	18
1	.78	2.63	3.94	3.25	0.87	1.37	.618	1.189	25	12
1 1/4	1.00	2.65	5.31	3.54	0.93	1.5	.614	1.185	66	30
1 1/2	1.26	3.40	6.14	4.13	0.93	1.5	.858	1.449	58	16
2	1.50	3.64	7.48	4.61	0.93	1.5	.831	1.421	68	12

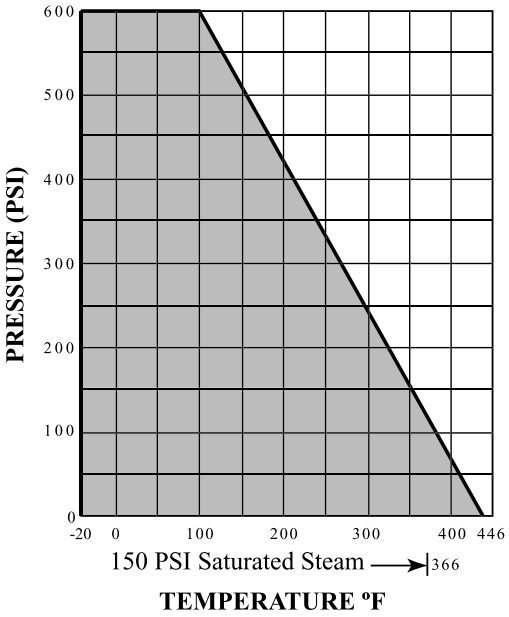


T - 10-24 UNC (1/4″-1″)
1/4-20 UNC (1 1/4″-2″)

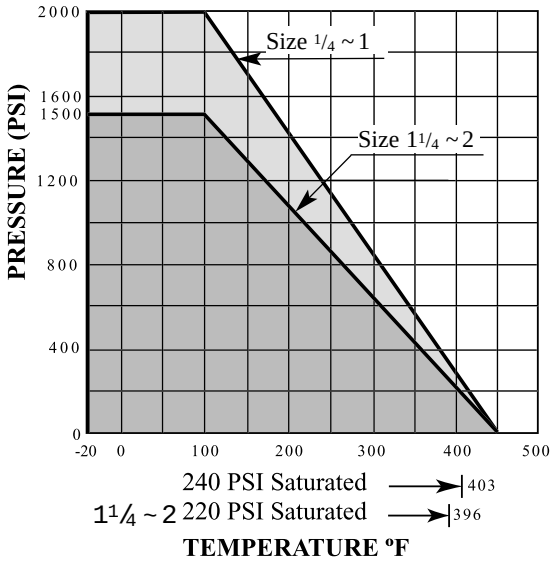
PRESSURE/TEMPERATURE CHART
CARBON STEEL BALL VALVES



CODE #	WATER, OIL, GAS 2000 PSI	MAX. TEMP 375 PSI	SATURATED STEAM
49M	-20 ~ 100ºF	300ºF	353ºF



CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP. 250 PSI	SATURATED STEAM
50	-20 ~ 100ºF	300ºF	366ºF



CODE #	WATER, OIL, GAS 2000 PSI	MAX. TEMP. 800 PSI	SATURATED STEAM
119, 217, 219, 237, 239			
Size 1/4 ~ 1	-20 ~ 100ºF	300ºF	403ºF
Size 1 1/4 ~ 2	**1500 PSI**	**650 PSI**	
	-20 ~ 100ºF	300ºF	396ºF

STAINLESS STEEL BALL VALVE ILLUSTRATED INDEX

NUMERICAL INDEX

150 WSP/600 WOG
One Piece
Reduced Port

AKUTKM Code # 52
Size 1/4″- 2″
(Threaded)

2000/1500 WOG
One Piece, Reduced Port
Mounting Pad, API 607, NACE

AKUTKZM-FSO
Code # 129-LOH
Size 1/4″- 1″
(Threaded)

AKUTKZM-FS
Code # 129
Size 1 1/4″ - 2″
(Threaded)

125 WSP/2000/1500 WOG
Two Piece, Regular Port
Mounting Pad

AKUTAHM
Code # 39
Size 1/4″ - 2″
(Threaded)

125 WSP/800 WOG
Two Piece, Full Port
Mounting Pad

AKUTFM Code # 53F
Size 1/4″ - 2″
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Mounting Pad, NACE

AKUTHZM-O
Code # 227-LOH
Size 1/4″ - 1″
(Threaded)

AKUTHZM
Code # 227
Size 1 1/4″ - 2″
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Mounting Pad, API 607, NACE

AKUTHZM-FSO
Code # 229-LOH
Size 1/4″ -1″
(Threaded)

AKUTHZM-FS
Code # 229
Size 1 1/4″ - 2″
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Seal Welded, Mounting Pad,
NACE

AKUTHWZM-O
Code # 247-LOH
Size 1/4″ -1″
(Threaded)

AKUTHWZM
Code # 247
Size 1 1/4″ -2″
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Seal Welded, Mounting Pad,
API 607, NACE

AKUTHWZM-FSO
Code # 249-LOH
Size 1/4″ - 1″
(Threaded)

AKUTHWZM-FS
Code # 249
Size 1 1/4″ - 2″
(Threaded)

1000 WOG
3 Piece, Regular Port
Swing Away Design

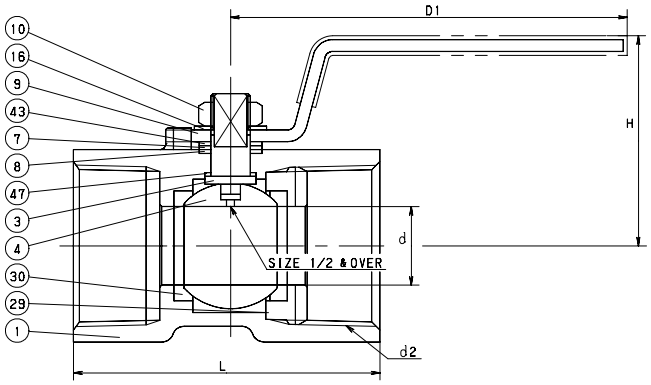
AKU3TM Code # 35
Size 1/4″ - 2″
(Threaded)

AWU3TM Code # 65
Size 1/4″ - 2″
(Solder)

STAINLESS STEEL BALL VALVE

One Piece Body • Reduced Port
G/F +PTFE Seats and Seals • Blowout Proof Stem
Stainless Steel Lever Handle

CODE # 52 (AKUTKM)
THREADED



STANDARDS	
END TO END	KITZ
THREADED ENDS	ASME B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-49

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 316)
8	GLAND PACKING	G/F + PTFE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 430)
10	SELF LOCKING NUT	STAINLESS STEEL (A276 TYPE 304)
16	SPRING WASHER	STAINLESS STEEL (A276 TYPE 304)
29	INSERT	STAINLESS STEEL (A276 TYPE 316 or A351 Gr. CF8M)
30	BALL SEATS	G/F + PTFE
43	SPRING	STAINLESS STEEL (A167 TYPE 304)
47	THRUST WASHER	REINFORCED PTFE

NOTES: (1) WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
1/4	.20	1.22	2.36	1.54	22	120
3/8	.28	1.42	2.76	1.73	32	120
1/2	.36	1.61	3.35	2.22	51	120
3/4	.49	1.73	3.35	2.32	61	96
1	.63	1.89	3.94	2.80	54	54
1 1/4	.79	2.13	3.94	3.07	52	32
1 1/2	.96	2.56	4.92	3.27	47	24
2	1.26	2.83	4.92	3.94	52	16

SPECIFICATION

Approved valve shall have one piece stainless steel body, blowout proof stem, G/F +PTFE seats/seals, stainless steel trim, stainless steel lever handle, and reduced port design. Valves shall be pressure rated to 150 WSP/600 WOG.

KITZ Code No. 52 (AKUTKM) Threaded Ends

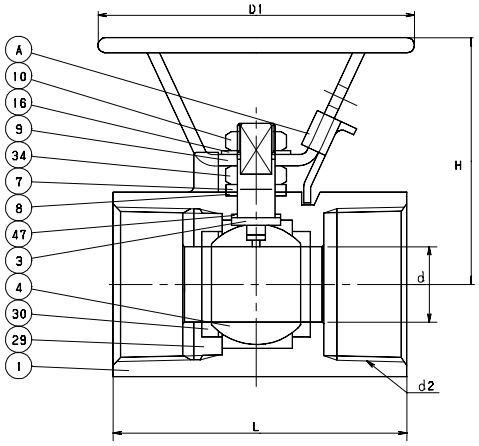
STAINLESS STEEL BALL VALVE

FIRE SAFE (API 607)

One Piece Body with Mounting Pad • Reduced Port
Blowout Proof Stem • NACE

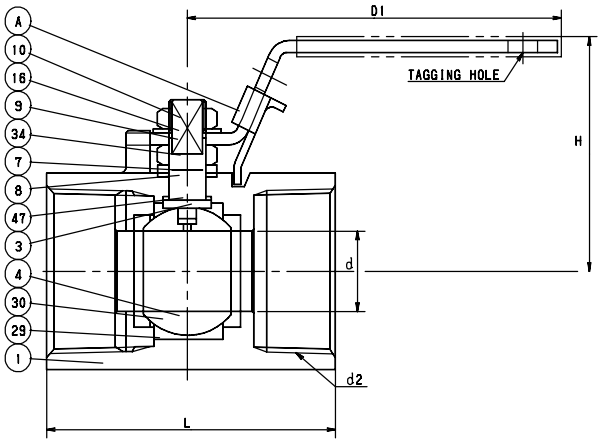
CODE # 129-LOH (AKUTKZM-FSO)

LOCKING OVAL HANDLE (1/4″-1″)
THREADED



CODE # 129 (AKUTKZM-FS)

LOCKING LEVER HANDLE (1 1/4″-2″)
THREADED



SPECIFICATION

Approved valve shall have one piece stainless steel body with mounting pad, blowout proof stem, PTFE seats, graphite packing, stainless steel trim, and reduced port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4″-1″) *and 1500 WOG with locking lever handle* (1 1/4″-2″) and fire safe certified to API 607.

KITZ Code No. 129-LOH (AKUTKZM-FSO)
129 (AKUTKZM-FS)

STANDARDS		
	END TO END	KITZ
	END CONNECTION	ASME B1.20.1
	WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE	
(1/4″-1″)	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4″-2″)	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-49

MATERIAL LIST

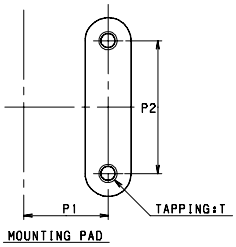
NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	FLEXIBLE GRAPHITE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 304)
10	NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/4″, 3/8″, 1″-2″)	STAINLESS STEEL (A276 TYPE 304)
29	INSERT	STAINLESS STEEL (A351 Gr. CF8M)
30	BALL SEATS	HYPATITE PTFE
34	NUT	STAINLESS STEEL (A194 Gr. 8)
47	THRUST WASHER (1/2″-2″)	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	APPROX. NET WT.	CARTON QTY
1/4	.18	1.69	3.94	1.97	-	-	16	24
3/8	.27	1.85	3.94	2.05	-	-	16	24
1/2	.36	2.13	3.94	2.56	.50	1.12	20	24
3/4	.49	2.24	3.94	2.76	.57	1.37	26	24
1	.59	2.36	3.94	3.15	.87	1.37	34	24
1 1/4	.79	2.52	4.33	3.74	1	1.50	58	30
1 1/2	.98	2.68	5.51	3.94	1	1.50	51	18
2	1.26	2.95	5.51	4.49	1	1.50	51	10

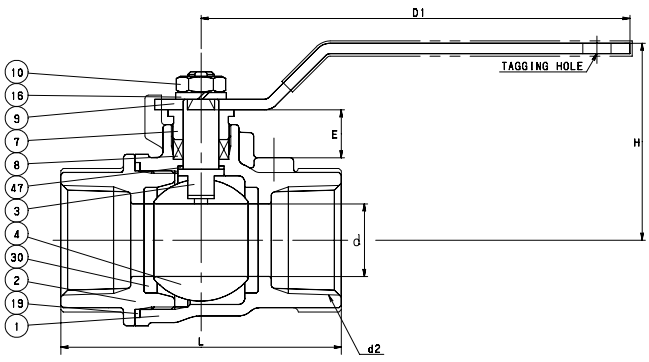
T - 10-24 UNC (1/2″-1″)
1/4-20 UNC (1 1/4″-2″)



STAINLESS STEEL BALL VALVE

Two Piece Body with Mounting Pad
Regular Port • Blowout Proof Stem • Locking Lever Handle

CODE # 39 (AKUTAHM)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
125 PSI - SATURATED STEAM TO 353ºF
2000 PSI (1/4″-1″) - NON-SHOCK COLD WATER, OIL OR GAS
1500 PSI (1 1/4″-2″) - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-49

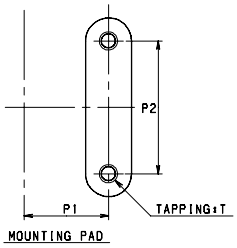
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAP	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	(1) STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
	2″	STAINLESS STEEL (A351 Gr. CF8M)
7	GLAND	STAINLESS STEEL (A276 TYPE 316)
8	GLAND PACKING	PTFE
9	HANDLE	(2) STAINLESS STEEL (A276 TYPE 430)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	PTFE
30	BALL SEATS	PTFE
47	THRUST WASHER	G/F + PTFE

NOTES: (1) CR. PLATING
(2) WITH PLASTIC COVERING
OVAL HANDLE OPTIONALLY AVAILABLE

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	E	APPROX. NET WT.	CARTON QTY
1/4	.37	1.89	3.94	2.05	.50	1.12	.57	16	24
3/8	.37	1.89	3.94	2.05	.50	1.12	.57	16	24
1/2	.49	1.93	3.94	2.24	.50	1.12	.57	20	24
3/4	.69	2.20	5.12	2.99	.87	1.37	.57	26	24
1	.87	2.32	5.12	3.35	.87	1.37	.57	34	24
1 1/4	.98	2.60	5.91	4.02	.93	1.5	.59	58	30
1 1/2	1.26	2.80	5.91	4.37	.93	1.5	.59	51	18
2	1.57	3.39	7.87	5.51	.93	1.5	.59	51	10



T - 10-24 UNC (1/4″-1″)
1/4-20 UNC (1 1/4″-2″)

SPECIFICATION

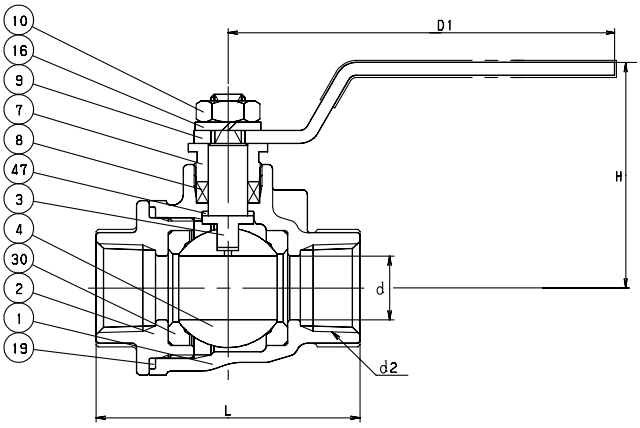
Approved valve shall have two piece stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, stainless steel trim, locking lever handle and regular port design. Valves shall be pressure rated to 2000 WOG (1/4″-1″) and 1500 WOG (1 1/4″-2″).

KITZ Code No. 39 (AKUTAHM) Threaded Ends

STAINLESS STEEL BALL VALVE

Two Piece Body with Mounting Pad • Full Port
Blowout Proof Stem • Lever Handle

CODE # 53F (AKUTFM)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
125 PSI - SATURATED STEAM TO 353ºF
800 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-49

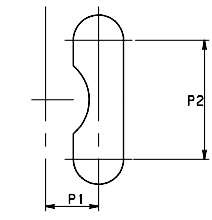
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAP	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	(1) STAINLESS STEEL (A276 TYPE 316)
4	BALL ($1/2$″-$1\,1/4$″)	STAINLESS STEEL (A276 TYPE 316)
	($1\,1/2$″ - 2″)	(A351 Gr. CF8M or A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 316)
8	GLAND PACKING	PTFE
9	HANDLE	(2) STAINLESS STEEL (A276 TYPE 430)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	PTFE
30	BALL SEATS	PTFE
47	THRUST WASHER	G/F + PTFE

NOTES: (1) CR. PLATING
(2) WITH PLASTIC COVERING
OVAL HANDLE OPTIONALLY AVAILABLE

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	APPROX. NET WT.	CARTON QTY
$1/2$	.59	2.09	3.94	2.44	.50	1.12	7	8
$3/4$	.79	2.28	5.12	2.87	.87	1.37	11	8
1	.98	2.44	5.12	3.35	.87	1.37	12	6
$1\,1/4$	1.26	2.83	5.91	3.86	.93	1.50	16	6
$1\,1/2$	1.57	3.07	5.91	4.25	.93	1.50	9	2
2	1.97	3.70	7.87	4.88	.93	1.50	15	2



MOUNTING PAD

SPECIFICATION

Approved valve shall have two piece stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, stainless steel trim, and full port design. Valves shall be pressure rated to 125 WSP/800 WOG.

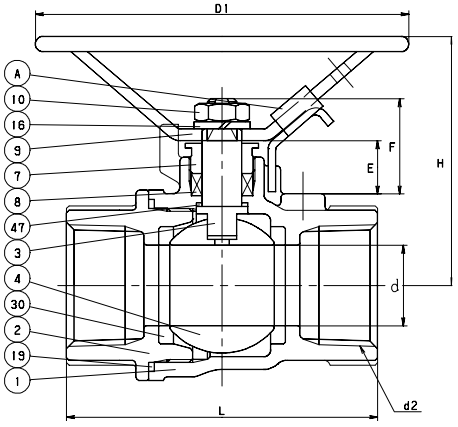
KITZ Code No. 53F (AKUTFM) Threaded Ends

STAINLESS STEEL BALL VALVE

Two Piece Body with Mounting Pad • Regular Port
Blowout Proof Stem • NACE

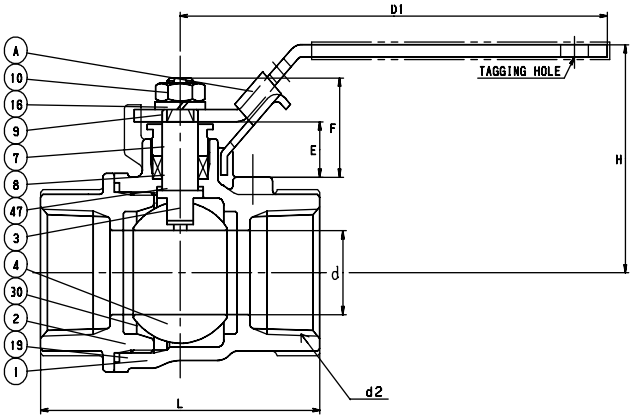
CODE # 227-LOH (AKUTHZM-O)

LOCKING OVAL HANDLE (1/4″-1″)
THREADED



CODE # 227 (AKUTHZM)

LOCKING LEVER HANDLE (1 1/4″-2″)
THREADED



SPECIFICATION

Approved valve shall have two piece stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4″-1″) and 1500 WOG with locking lever handle (1 1/4″-2″).

KITZ Code No. 227-LOH (AKUTHZM-O)
227 (AKUTHZM)

STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
WALL THICKNESS	BS 5351 CLASS 800 (1/4″-1″) ASME B16.34 CLASS 600 (1 1/4″-2″)

PRESSURE/TEMPERATURE	
(1/4″-1″)	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4″-2″)	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-49

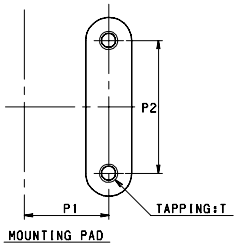
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAP	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	PTFE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 304)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2″-2″)	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	PTFE
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CTN QTY
1/4	.38	2.24	3.94	2.08	.5	1.12	.394	.728	16	24
3/8	.46	2.24	3.94	2.08	.5	1.12	.425	.760	16	24
1/2	.50	2.45	3.94	2.40	.5	1.12	.524	.957	20	24
3/4	.59	2.51	3.94	2.71	.87	1.37	.496	.929	26	24
1	.78	2.63	3.94	3.25	.87	1.37	.618	1.189	34	24
1 1/4	1.00	2.65	5.31	3.54	.93	1.50	.614	1.185	58	30
1 1/2	1.26	3.40	6.14	4.13	.93	1.50	.858	1.449	51	18
2	1.50	3.64	7.48	4.61	.93	1.50	.831	1.421	51	10



T - 10-24 UNC (1/4″-1″)
1/4-20 UNC (1 1/4″-2″)

STAINLESS STEEL BALL VALVE

FIRE SAFE (API 607)

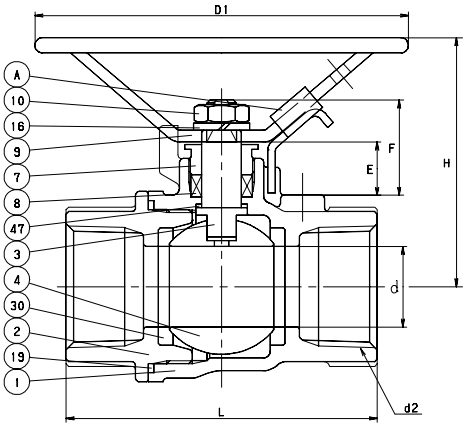
Two Piece Body with Mounting Pad

Regular Port • Blowout Proof Stem • NACE

CODE # 229-LOH (AKUTHZM-FSO)

LOCKING OVAL HANDLE (1/4″-1″)

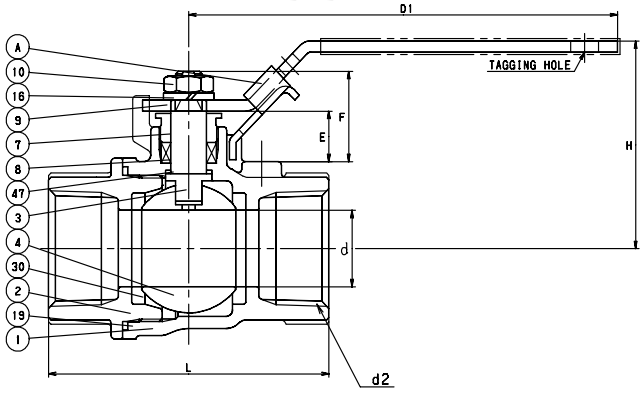
THREADED



CODE # 229 (AKUTHZM-FS)

LOCKING LEVER HANDLE (1 1/4″-2″)

THREADED



SPECIFICATION

Approved valve shall have two piece stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4″-1″) *and 1500 WOG with locking lever handle* (1 1/4″-2″) and fire safe certified to API 607.

KITZ Code No. 229-LOH (AKUTHZM-O)
229 (AKUTHZM)

STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
WALL THICKNESS	BS 5351 CLASS 800 (1/4″-1″) ASME B16.34 CLASS 600 (1 1/4″-2″)

PRESSURE/TEMPERATURE	
(1/4″-1″)	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4″-2″)	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-49

MATERIAL LIST

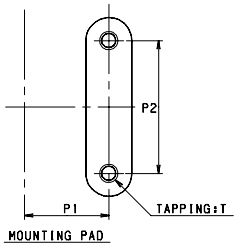
NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAP	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	FLEXIBLE GRAPHITE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 304)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2″-2″)	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	FLEXIBLE GRAPHITE
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CTN QTY.
1/4	.38	2.24	3.94	2.08	.5	1.12	.394	.728	16	24
3/8	.46	2.24	3.94	2.08	.5	1.12	.425	.760	16	24
1/2	.50	2.45	3.94	2.40	.5	1.12	.524	.957	20	24
3/4	.59	2.51	3.94	2.71	.87	1.37	.496	.929	26	24
1	.78	2.63	3.94	3.25	.87	1.37	.618	1.189	34	24
1 1/4	1.00	2.65	5.31	3.54	.93	1.50	.614	1.185	58	30
1 1/2	1.26	3.40	6.14	4.13	.93	1.50	.858	1.449	51	18
2	1.50	3.64	7.48	4.61	.93	1.50	.831	1.421	51	10

T - 10-24 UNC (1/4″-1″)
1/4-20 UNC (1 1/4″-2″)



STAINLESS STEEL BALL VALVE

SEAL WELDED

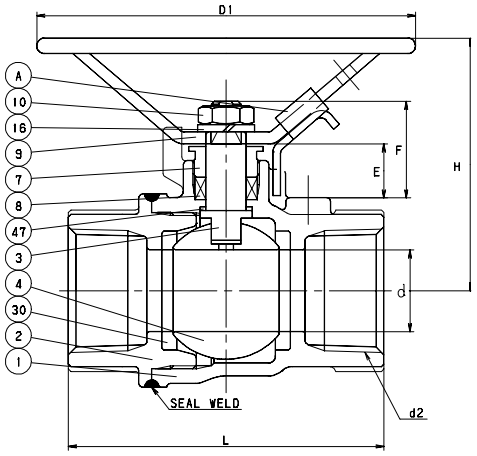
Two Piece Body with Mounting Pad

Regular Port • Blowout Proof Stem • NACE

CODE # 247-LOH (AKUTHWZM-O)

LOCKING OVAL HANDLE (1/4″-1″)

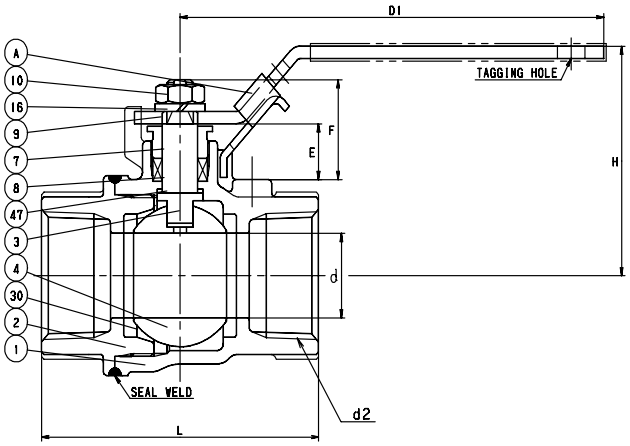
THREADED



CODE # 247 (AKUTHWZM)

LOCKING LEVER HANDLE (1 1/4″-2″)

THREADED



SPECIFICATION

Approved valve shall have two piece seal welded stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, graphite packing, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4″-1″) and 1500 WOG with locking lever handle (1 1/4″-2″).

KITZ Code No. 247-LOH (AKUTHWZM-O)
247 (AKUTHWZM)

STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	BS 5351 CLASS 800 (1/4″-1″)
	ASME B16.34 CLASS 600 (1 1/4″-2″)

PRESSURE/TEMPERATURE	
(1/4″-1″)	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4″-2″)	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-49

MATERIAL LIST

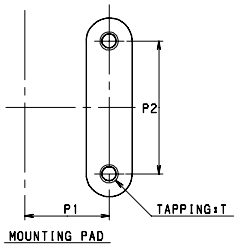
NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST STEEL (A351 Gr. CF8M)
2	BODY CAP	CAST STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	FLEXIBLE GRAPHITE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 304)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2″-2″)	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	PTFE
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CTN QTY
1/4	.38	2.24	3.94	2.08	0.5	1.12	.394	.728	17	24
3/8	.46	2.24	3.94	2.08	0.5	1.12	.425	.760	17	24
1/2	.50	2.45	3.94	2.40	0.5	1.12	.524	.957	16	18
3/4	.59	2.51	3.94	2.71	0.87	1.37	.496	.929	22	18
1	.78	2.63	3.94	3.25	0.87	1.37	.618	1.189	25	12
1 1/4	1.00	2.65	5.31	3.54	0.93	1.5	.614	1.185	66	30
1 1/2	1.26	3.40	6.14	4.13	0.93	1.5	.858	1.449	58	16
2	1.50	3.64	7.48	4.61	0.93	1.5	.831	1.421	68	12

T - 10-24 UNC (1/4″-1″)
1/4-20 UNC (1 1/4″-2″)



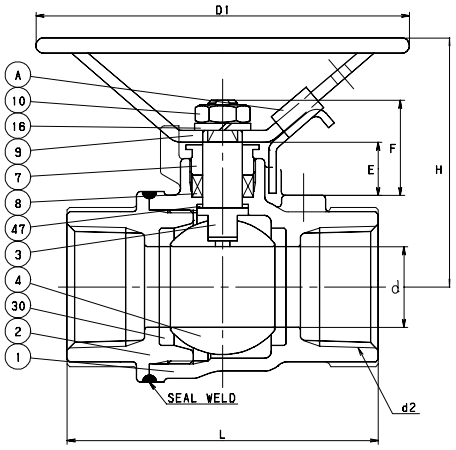
STAINLESS STEEL BALL VALVE

SEAL WELD/FIRE SAFE (API 607)

Two Piece Body with Mounting Pad • Regular Port
Blowout Proof Stem • NACE

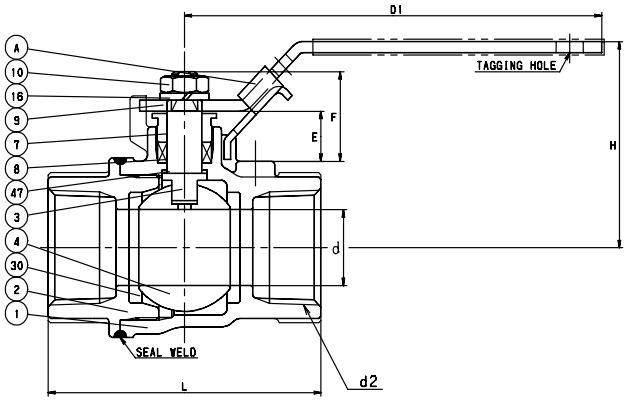
CODE # 249-LOH (AKUTHWZM-FSO)

LOCKING OVAL HANDLE (1/4″-1″)
THREADED



CODE # 249 (AKUTHWZM-FS)

LOCKING LEVER HANDLE (1 1/4″-2″)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	BS 5351 CLASS 800 (1/4″-1″)
	ASME B16.34 CLASS 600 (1 1/4″-2″)

PRESSURE/TEMPERATURE	
(1/4″-1″)	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4″-2″)	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-49

MATERIAL LIST

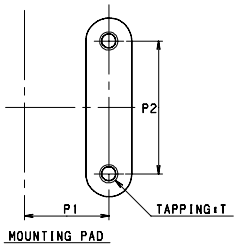
NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAP	CAST STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	FLEXIBLE GRAPHITE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 304)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2″-2″)	STAINLESS STEEL (A276 TYPE 304)
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CTN QTY
1/4	.38	2.24	3.94	2.08	0.5	1.12	.394	.728	17	24
3/8	.46	2.24	3.94	2.08	0.5	1.12	.425	.760	17	24
1/2	.50	2.45	3.94	2.40	0.5	1.12	.524	.957	16	18
3/4	.59	2.51	3.94	2.71	0.87	1.37	.496	.929	22	18
1	.78	2.63	3.94	3.25	0.87	1.37	.618	1.189	25	12
1 1/4	1.00	2.65	5.31	3.54	0.93	1.5	.614	1.185	66	30
1 1/2	1.26	3.40	6.14	4.13	0.93	1.5	.858	1.449	58	16
2	1.50	3.64	7.48	4.61	0.93	1.5	.831	1.421	68	12

T - 10-24 UNC (1/4″-1″)
1/4-20 UNC (1 1/4″-2″)



SPECIFICATION

Approved valve shall have two piece seal welded stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, graphite packing, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4″-1″) and 1500 WOG with locking lever handle (1 1/4″-2″) and fire safe certified to API 607.

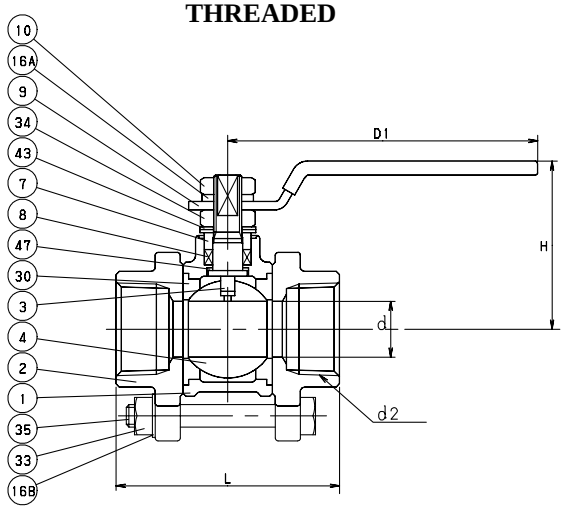
KITZ Code No. 249-LOH (AKUTHWZM-O)
249 (AKUTHWZM)

STAINLESS STEEL BALL VALVE

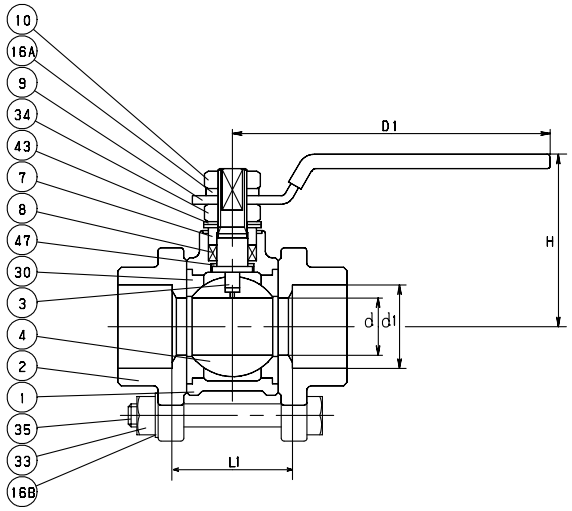
SWING AWAY DESIGN

Three Piece Body • Regular Port
Blowout Proof Stem • Lever Handle

CODE # 35 (AKU3TM)
THREADED



CODE # 65 (AWU3TM)
SOCKET WELD



STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
WALL THICKNESS	KITZ
SOCKETS	CONFORM TO ASME B16.11

PRESSURE/TEMPERATURE
125 PSI - SATURATED STEAM TO 353ºF 1000 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-49

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAPS	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	(1) STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316 or A351 Gr. CF8M)
7	GLAND	STAINLESS STEEL (A276 TYPE 316)
8	GLAND PACKING	PTFE
9	HANDLE	(2) STAINLESS STEEL (A276 TYPE 430)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16A	SPRING WASHER (3/4″-2″)	STAINLESS STEEL (A276 TYPE 304)
16B	SPRING WASHER (Qty 4)	STAINLESS STEEL (A276 TYPE 304)
30	BALL SEATS	PTFE
33	CAP NUT (Qty 4)	STAINLESS STEEL (A194 Gr. 8)
34	GLAND NUT	STAINLESS STEEL
35	CAP BOLT (Qty 4)	STAINLESS STEEL (A193 Gr. B 8)
43	CONED DISC SPRINGS	STAINLESS STEEL
47	THRUST WASHER	G/F + PTFE

NOTES: (1) CR. PLATING
(2) WITH PLASTIC COVERING
OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS - WEIGHTS - QUANTITIES

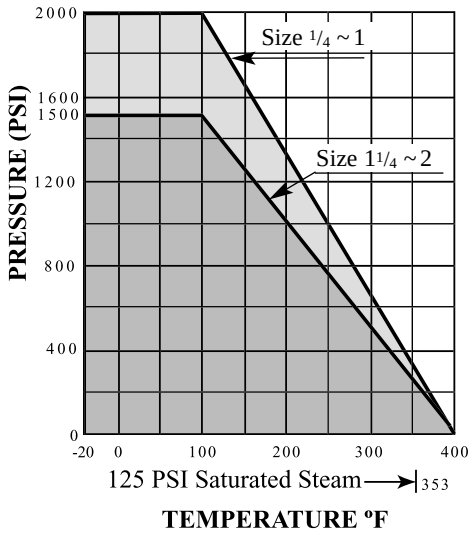
d2 SIZE	d	H	D1	L	d1	L1	APPROX. NET WT.	CARTON QTY
1/4	.39	1.65	3.15	2.24	.56	1.48	45	48
3/8	.39	1.65	3.15	2.24	.69	1.48	45	48
1/2	.39	1.85	3.94	2.48	.86	1.72	43	40
3/4	.59	2.09	3.94	2.91	1.06	1.91	45	24
1	.79	2.48	5.12	3.23	1.33	2.23	46	18
1 1/4	.98	2.64	5.12	3.86	1.68	2.86	50	12
1 1/2	1.26	3.07	5.91	4.33	1.91	3.33	45	8
2	1.50	3.31	5.91	5.04	2.41	3.78	36	4

SPECIFICATION

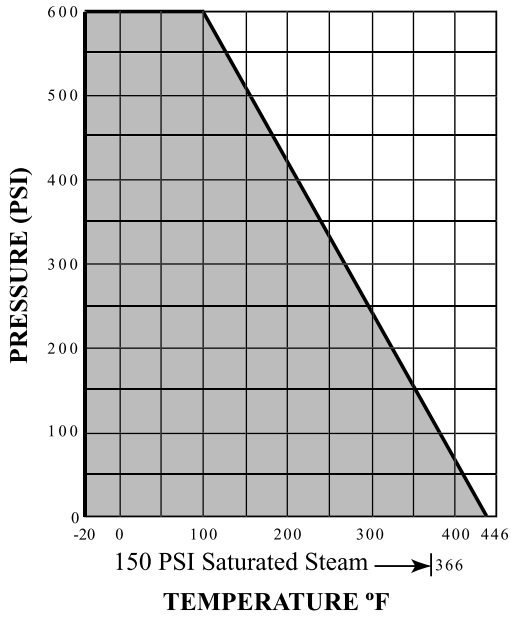
Approved valve shall have three piece swing away design, stainless steel body, blowout proof stem, PTFE seats/seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 125 WSP/1000 WOG.

KITZ Code No. 35 (AKU3TM) Threaded End
65 (AWU3TM) Soldered Ends

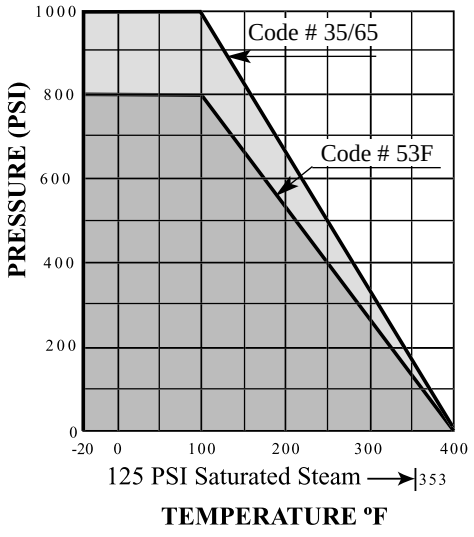
PRESSURE/TEMPERATURE CHART
STAINLESS STEEL BALL VALVES



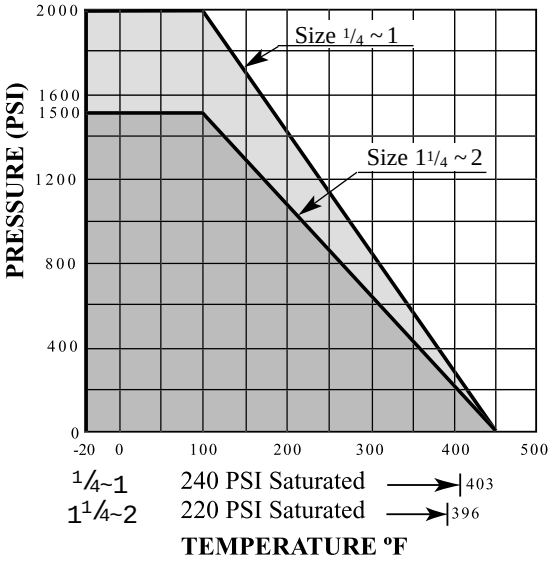
CODE #	WATER, OIL, GAS 2000 PSI	MAX. TEMP 375 PSI	SATURATED STEAM
39	-20 ~ 100ºF	300ºF	353ºF



CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP. 250 PSI	SATURATED STEAM
52	-20 ~ 100ºF	300ºF	366ºF



CODE #	WATER, OIL, GAS 800 PSI	MAX. TEMP 150 PSI	SATURATED STEAM
53F	-20 ~ 100ºF	350ºF	353ºF
	1000 PSI	**150 PSI**	
35/65	-20 ~ 100ºF	350ºF	353ºF



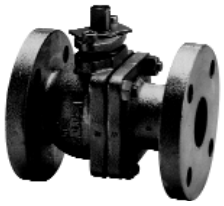
CODE #	WATER, OIL, GAS 2000 PSI	MAX. TEMP. 800 PSI	SATURATED STEAM
129, 227, 229, 247, 249			
Size 1/4 ~ 1	-20 ~ 100ºF	300ºF	403ºF
Size 1 1/4 ~ 2	**1500 PSI**	**650 PSI**	
	-20~100ºF	300ºF	396ºF

KITZ®
A PRODUCT OF TECHNOLOGY

CAST IRON BALL VALVE ILLUSTRATED INDEX

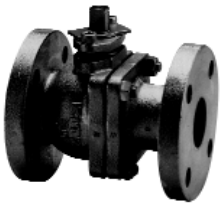
NUMERICAL INDEX

125 WSP/200 WOG
Two Piece
Full Port



125FCTB Code # 90
Size 2″- 8″
(Flat Face Flanged)

125 WSP/200 WOG
Two Piece
Regular Port



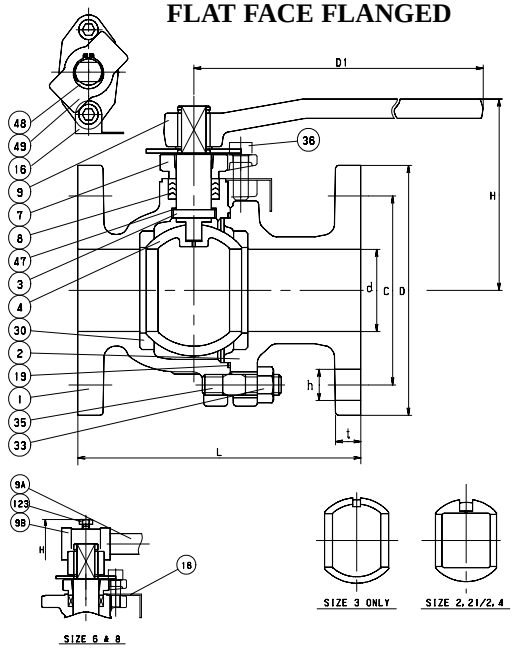
125FCTR Code # 91
Size 6″- 10″
(Flat Face Flanged)

CAST IRON BALL VALVE

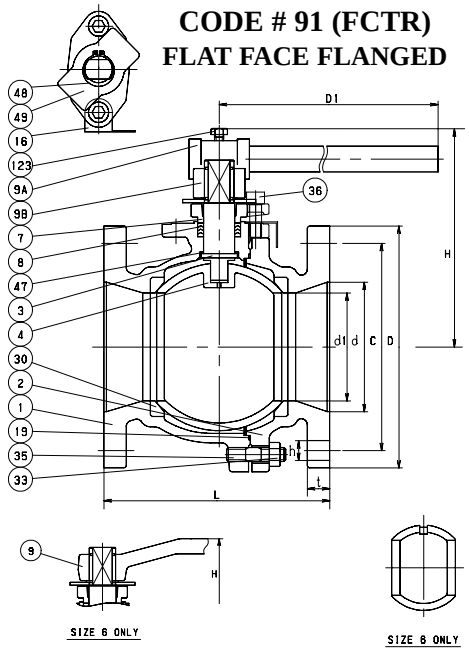
CLASS 125

Two Piece Body • Blowout Proof Stem
Full Port (#90) / Regular Port (#91)

CODE # 90 (FCTB)
FLAT FACE FLANGED



CODE # 91 (FCTR)
FLAT FACE FLANGED



SPECIFICATION

Approved valve shall have Class 125 WSP/200 WOG cast iron body, CF8 stainless steel trim, blowout proof stem, PTFE seats and seals with flat face flanged ends and conforming to MSS SP-72, ASME B16.1, ASME B16.10.

KITZ Code # 90 (125FCTB) Full Port
KITZ Code # 91 (125FCTR) Standard Port

STANDARDS	
END TO END	ASME B16.10 CLASS 125/150
END CONNECTION	ASME B16.1 CLASS 125
WALL THICKNESS	KITZ
CONFORMS TO MSS SP72	

PRESSURE/TEMPERATURE
125 PSI - SATURATED STEAM TO 353ºF
200 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-52

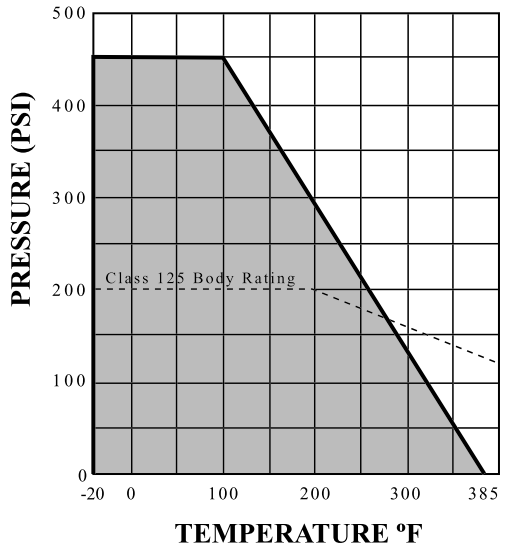
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST IRON (A126 Cl. B)
2	BODY CAPS	CAST IRON (A126 Cl. B)
3	STEM	STAINLESS STEEL (A276 TYPE 304)
4	BALL	STAINLESS STEEL (A276, TYPE 304 or A351 Gr. CF8)
7	GLAND	DUCTILE IRON
8	GLAND PACKING (1 SET)	PTFE
9	HANDLE	DUCTILE IRON
9A	HANDLE BAR	CARBON STEEL (6″-10″)
9B	HANDLE HEAD	DUCTILE IRON (6″-10″)
16A	NAME PLATE	ALUMINUM
16B	WASHER	CARBON STEEL
19	GASKET	PTFE
30	BALL SEATS	PTFE
33	CAP NUT (1 SET)	CARBON STEEL
35	CAP BOLT (1 SET)	CARBON STEEL
36	GLAND BOLT (1 SET)	CARBON STEEL
47	THRUST WASHER	G/F + PTFE
48	SNAP RING	CARBON STEEL
49	STOPPER	STAINLESS STEEL
123	HANDLE BOLT	CARBON STEEL (6″-10″)

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	BOLT NO.	BOLT SIZE	APPROX. NET WT.	CARTON QTY
				#90 - Full Port				
2	1.97	4.72	9.06	7.01	4	5/8	22	1
2 1/2	2.56	6.02	15.75	7.48	4	5/8	37	1
3	3.15	6.38	15.75	7.99	4	5/8	46	1
4	3.94	7.52	18.11	9.02	8	5/8	70	1
6	5.91	11.42	39.37	15.51	8	3/4	174	1
8	7.87	13.39	59.06	17.99	8	3/4	244	1
				#91 - Standard Port				
6	4.92	8.31	18.11	10.51	8	3/4	119	1
8	5.91	11.42	39.37	11.50	8	3/4	178	1
10	7.87	13.39	59.06	12.99	12	7/8	262	1

PRESSURE/TEMPERATURE CHART
CAST IRON BALL VALVES



CODE #	WATER, OIL, GAS 450 PSI	MAX. TEMP 125 PSI	SATURATED STEAM
90/91	-20 ~ 100ºF	300ºF	-

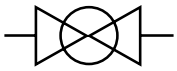
ENGINEERING DATA INDEX

VALVE TERMS AND PIPING SYMBOLS
VALVE & FITTING INDUSTRY ABBREVIATIONS

AFS	American Foundrymen's Society
AGA	American Gas Association
ANSI	American National Std. Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing & Materials
AWWA	American Water Works Association
BB	Bolted Bonnet
BFV	Butterfly Valve
BHN	Brinell Hardness Number
BTU	British Thermal Unit
BW	Butt Weld
BWE	Butt Weld Ends
C	Celcius Degrees
CxC	Copper to Copper
CDA	Copper Development Association
CI	Cast Iron
Cr 13	13% Chromium Stainless Steel
CSA	Canadian Standards Association
DD	Double Disc
DI	Ductile Iron
F	Fahrenheit Degrees
FE	Flanged End
FF	Flat Faced
FM	Factory Mutual Laboratories
FOB	Free On Board
GPM	Gallons Per Minute
Hg	Hydragyrum (Mercury)
HB	Brinell Hardness
HRC	Rockwell C Hardness
IBBM	Iron Body Bronze Mounted
ID	Inside Diameter
IPS	Iron Pipe Size
ISNRS	Inside Screw Non-Rising Stem
ISO	International Standards Organization
ISRS	Inside Screw Rising Stem
MSS	Manufacturers Standardization Society
MTR	Material Test Report
NPT	National Pipe Taper (Pipe Thread)
NSR	Non-Rising Stem
OD	Outside Diameter
OS&Y	Outside Screw and Yoke
PN	Pressure Nominal (Metric)
PSI	Pounds Per Square Inch
PSIA	Pounds Per Square Inch Absolute
PSIG	Pounds Per Square Inch Gage
P–T	Pressure – Temperature
Rc	Rockwell "C"
RF	Raised Face
RPM	Revolutions Per Minute
RS	Rising Stem
SB	Screw-In-Bonnet
SE	Screwed Ends
SJ	Solder Joint
SS	Stainless Steel
STD	Standard
SWP	Steam Working Pressure
TRIM	Certain Valve Parts – Stems, Seats, Etc.
UB	Union Bonnet
UL	Underwriter's Laboratories
WOG	Working Pressure: Water, Oil and Gas
WSP	Working Steam Pressure
WWP	Water Working Pressure

VALVE SELECTION GUIDE

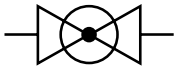
GATE



Recommended for:

- Full Open/Closed Service
- Minimal Line Pressure Drop
- Infrequent Operation

GLOBE



Recommended for:

- Throttling of flow
- Frequent Operation
- Service with some line resistance to flow
- Angle Valves offer less resistance to flow than valve and elbow.

CHECK

Recommended for:

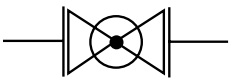
- Control of direction of flow and quick automatic reaction to flow change.
- Use in conjunction with gate valve.
  - They should not be used in air compressor service or on a reciprocating pump as these services will cause chattering and valve vibration damage.

BALL

Recommended for:

- On and Off service or throttling of flow
- When positive shut-off is necessary
- When low valve profile is necessary
- Quarter turn operation - 90º rotation from fully open/fully closed
- Easily adapts to automation
- Handle position is a quick indication of whether valve is open or closed.
- Full port ball valve design offers no resistance to flow.

BUTTERFLY



Recommended for:

- Positive shut-off is necessary
- Fully open or fully closed applications (may be used for throttling applications)
- Quarter turn operation - 90º rotation from fully open/fully closed
- Easily adapts to automation
- Light weight design offers easy installation
- Replaces costly Iron body gate valves

REFERENCED SPECIFICATIONS AND DESIGN STANDARDS

KITZ valves are manufactured under strict quality control throughout all stages of production, beginning with inspection of chemical composition and mechanical properties of materials. Extra care is given to inspection and testing at all machine shops and assembly plants, utilizing up-to-date precision equipment. All KITZ valves are subject to strict hydrostatic pressure testing of the body and seat sealing as well as other exhaustive testing to assure long life service and Quality KITZ Performance.

Manufacturers Standardization Society
MSS SP-110
Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flare Ends

MSS SP-25
Standard Marking System for Valves, Fitting, Flanges and Unions

API 607
Fire Test for Soft Seated Quarter Turn Valves

American National Standards Institute / National Sanitation Foundation
ANSI/NSF61
Drinking Water System Components - Health Effects

CSA International (United States and Canada)
AGA 3-88 - Manually Operated Gas Valves For use in In House Piping Systems
ANSI/ASME B16.33 - Manually Operated Metallic Gas Valve For use In Gas Piping Systems up 125 psig (½"-2")
CGA 3.16 - M88 - Lever Operated Non-Lubricated Gas Shut-Off Valves
CGA 9.1-M97 / ANSI Z21.15-1997 - Manually Operated Gas Valves For Appliances, Appliance Connectors Valves and Hose End Valves
CGA 9.2-M88 - Manually Operated Shut-Off Valves For Gas Piping Systems
CGA Cr91-002, May 1995 - Manually Operated Gas Valves For Use On Piping

Underwriters Laboratories, Inc.
UL125 - Listed for:
YSDT - LP Gs Shut-Off, 250 PSI
YDNZ - Compressed Gas Shut-Off
UL842 - Listed for:
YRPV - Gas Shut-Off
YRBZ - Flammable Gas Shut-Off
MHKZ - Manual Valves
UL1769 - Listed for:
YQNZ - Cylinder Valves
UL258 - Listed for:
Fire Protection Service, Shut-Off Valves For Trim And Drain.

Factory Mutual Research
1140 - Manually Operated

For special applications, contact your KITZ representative.

DEZINCIFICATION

What is Dezincification?

Deterioration of water quality and changes in piping materials have amplified valve dezincification problems.

The copper alloy used in bronze valves contains zinc, tin, and lead with copper as a base. When bronze valves are subjected to unfavorable operating conditions the zinc component contained in the copper alloy separates from the copper base, and the metal corrodes. This is called dezincification.

In a bronze valve, the body, bonnet, and other bronze cast parts hardly corrode at all due to the small percentage of zinc in the alloy. Brass parts with a 40% zinc content (stems in particular) are subject to extreme dezincification.

Why Does Dezincification Occur?

The following factors cause dezincification. These factors are generally believed to occur together, rather than independently.

1) Aqueous solutions high in acidity.
2) Warm water with a high free carbonic acid content and high electrical conductivity.
3) High electrical conductivity with large quantities of chlorides and sulfides present.
4) With copper or vinyl chloride pipes.
5) With a large quantity of dissolved oxygen.

What is K-Metal?

To combat dezincification KITZ developed "K-Metal," used in the stems of all KITZ brass valves and any other valves not using Bronze Alloy B62. The charts below compare K-Metal with B124, B16, B62, and a competitor's dezincification material. Compared are tensile strength, corrosion quantity,hardness,and dezincification. The comparisons clearly show K-Metal's overall superiority and explain why KITZ valves provide superior performance and give longer life. Figures 1 through 4 compare "K-Metal" with other materials. Material manufactured by a competitor is a dezincification-resistant material.

Fig. 1 Comparison of Tensile Strength

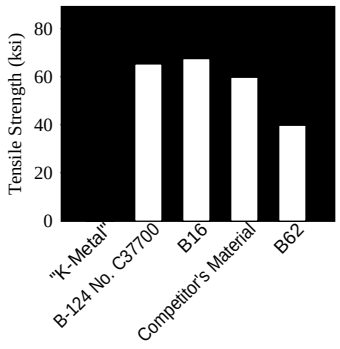


Fig. 2 Hardness Comparison

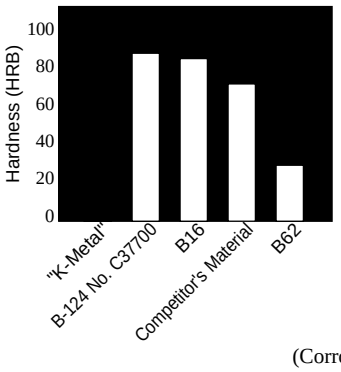


Fig. 3 Corrosion Quantity Comparison ($1mg/cm^2=0.014$ mlb/in^2)

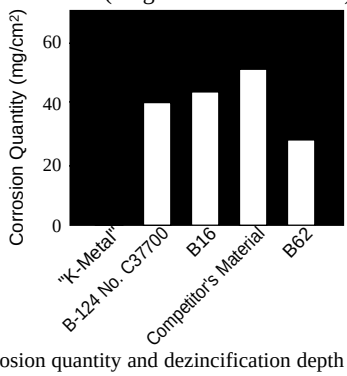
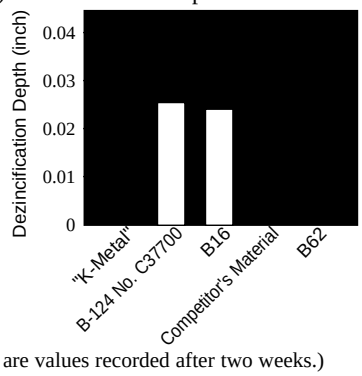


Fig. 4 Comparison of Dezincification Depth



(Corrosion quantity and dezincification depth are values recorded after two weeks.)

NOTE: The dezincification test was based on the Australian Standard AS C316.

Conclusion

By using dezincification-resistant copper-based alloy "K-Metal", KITZ maintains strict quality control. You can depend on KITZ bronze and brass valves to be free of corrosion problems.

PROPERTIES OF VALVE MATERIALS

BRONZE AND BRASS

ASTM NO.	ALLOY NAME	CHEMICAL COMPOSITION nominal or maximum	MATERIAL (PSI)	NOMINAL PHYSICAL PROPERTIES TENSIL STRENGTH (PSI)	YIELD STRENGTH (%)	ELONGATION
B62	COMPOSITION BRONZE Suitable to 450°F	86.0 6.0 6.0 6.0	COPPER (Cu) TIN (Sn) LEAD (Pb) ZINC (Zn)	30,000	14,000	20
B61	NAVY M BRONZE (Steam Bronze) Suitable to 550°F	88.0 6.0 2.0 4.0	COPPER (Cu) TIN (Sn) LEAD (Pb) ZINC (Zn)	34,000	16,000	22
B283 (37700)	FORGING BRASS Suitable to 406°F	61.0 2.5 0.30 Rem.	COPPER (Cu) LEAD (Pb) IRON (Fe) ZINC (Zn)	50,000	18,000	25
B584 (C84400)	LEADED BRASS Suitable to 406°F	82.0 3.5 8.0 10.0 1.0 0.40 0.08 0.02	COPPER (Cu) TIN (Sn) LEAD (Pb) ZINC (Zn) NICKEL IRON (Fe) SULPHER (S) PHOSPHORUS(P)	29,000	13,000	18
"K" METAL	DEZINCIFICATION RESISTANT Suitable to 406°F	61.0 2.5 2.5 Rem.	COPPER (Cu) LEAD (Pb) IRON (Fe) ZINC (Zn)	SPECIAL METAL – KITZ SPECIFICATION		

GRAY IRON

A126 CLASS B	GRAY IRON	.75 .15	PHOSPHORUS(P) SULPHER (S)	31,000	—	—

CARBON STEEL

A307 Gr. B	STEEL BOLTING STEEL NUTS	.20 .45 .04 .05	COPPER (C) MAGANESE (Mn) PHOSPHORUS(P) SILICON (Si)	100,000	—	18

STAINLESS STEEL

A182-F6a	FORGED 410	.15 13 1.0 .04 1.0 .03	COPPER (C) CHROME (Cr) MAGANESE (Mn) PHOSPHORUS(P) SILICON (Si) SULFUR (S)	85,000	55,000	18
A-351	CAST 316 (CF8M)	.08 20 1.5 2.5 11 .04 2.0 .04	COPPER (C) CHROME (Cr) MAGANESE (Mn) MOLYBDENUM(Mo) NICKEL (Ni) PHOSPHORUS(P) SILICON (Si) SULFUR (S)	75,000	30,000	25
A276-316	WROT 316 (CF8M)	.08 17 2.0 12 .045 1.0	COPPER (C) CHROME (Cr) MAGANESE (Mn) NICKEL (Ni) PHOSPHORUS(P) SILICON (Si) SULFUR (S)	75,000	30,000	30 .03

OTHER PHYSICAL PROPERTIES OF MATERIAL AVAILABLE UPON REQUEST.

KITZ BALL VALVE SEAT MATERIALS

PTFE

PTFE is a Tetrafluoroethylene resin. It is a first-rate all-round general purpose sealing material. PTFE has excellent resistance to chemical attack by a broad range of organic chemicals, inorganic chemicals and solvents and is generally considered chemically inert. PTFE is a self-lubricating polymer with a very low friction coefficient. Thus making it ideal for seating material for quarter-turn ball valves.

Color
PTFE resin has a natural pigment of WHITE

Temperature Range
Ball Valve Applications
-40 ~ 400 ºF

Pressure Range
27 inches of vacuum to (refer to valve maximum Pressure/Temperature rating non-shock water oil or gas).

Features
1) Excellent choice for low-pressure sealing.
2) Low friction coefficient makes it ideal for automation.

Typical Application
Cold and hot potable water, HVAC - chilled and hot water, and evaporative cooling systems

Product Availability by Code #
35, 39, 49M, 53F
54, 55, 54P & 55P
56 & 57
58, 58N, 58NW, 59, 59N, 59NW
65, 68, 68A, 68AB, 68AD, 68AM, 68C, 68M, 68O, 68P, 68S, 68U, 69, 69AD, 69C, 69O, 69U
62 & 63
90 & 91

20% GLASS REINFORCED PTFE

KITZ uses fiberglass to reinforce our mid-range ball valves. The glass reinforcement increases the pressure containing capabilities of the PTFE by reducing its tendency to cold-flow.

Color
PTFE resin has a natural pigment of WHITE

Temperature Range
Ball Valve Applications
-20 ~ 450 ºF

Pressure Range
27 inches of vacuum to 600 psi non-shock water oil or gas.

Features
1) Greater resistance to cold-flow than PTFE.

Typical Application
20% glass reinforced PTFE is ideal for use on mid-range steam applications.

Product Availability by Code #
50, 51, 52

KITZ BALL VALVE SEAT MATERIALS

HYPATITE PTFE

Hypatite PTFE has been formulated to offer a unique pure white seat material, which eliminates user concerns about product contamination. Hypatite PTFE has been molecularly altered to provide a seat material, which offers the pressure and temperature of reinforced PTFE without the use of reinforcing filler material.

Color
PTFE resin has a natural pigment of WHITE

Temperature Range
Ball Valve Applications
-20 ~ 450 ºF

Pressure Range
27 inches of vacuum to 2000 psi (1/4″-1″), 1500 psi (1 1/2″ -2″) non-shock water oil or gas.

Features
Eliminates user concern about product contamination from filler materials.

Typical Application
It is a first-rate all-round general purpose sealing material. Hypatite PTFE has excellent resistance to chemical attack by a broad range of organic chemicals, inorganic chemicals and solvents and is generally considered chemically inert. Hypatite PTFE is a self-lubricating polymer with a very low friction coefficient. It is excellent for mid-range steam applications.

Product Availability by Code #
119, 129, 217, 219, 227, 229, 237, 239, 247 & 249

CARBON-FILLED PTFE

Carbon-filled PTFE is an excellent seat material for steam applications as well as high efficiency oil-based thermal fluids. Other fillers including graphite enable this seat material to have better cycle life than other filled or reinforces PTFE seats. Chemical resistance is equal to other TFE/PTFE and filled TFE/PTFE products.

Color
Carbon-filled PTFE has a natural pigment of Black.

Temperature Range
Ball Valve Applications
-20 ~ 500 ºF

Pressure Range
27 inches of vacuum to 600 psi (1/4″-2″), 400 psi (2 1/2″-4″) non-shock water oil or gas.

Features
Higher cycle life than other TFE/PTFE resins.

Typical Applications
This material is excellent for high pressure steam and thermal fluid applications.

Product Availability by Code #
68PM
62M

FLOW DATA Cv VALUES

LIQUID FLOW:

$$Q = Cv \sqrt{\Delta P/S}$$

Q = liquid flow rate (gallons per minute)
ΔP = pressure drop across valve (psi)
S = specific gravity of media

Cv is defined as the flow in GPM that a valve will carry with a pressure drop of 1.0 psi when the media is water at 60º.

GAS FLOW:

$$Q = 1360\ Cv \sqrt{\Delta P \times P_1/ST}$$

Q = gas flow rate (SCFH — std. cu. ft./hr.)
S = specific gravity of gas (air = 1.0)
T = temp. - degrees rankin (ºF + 460)
ΔP = pressure drop across valve (psi)
P_1 = upstream pressure (psia) absolute

Note that ΔP must be less than .5
(Flow is critical when ΔP is greater than .5 P_1).

CODE NO.	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
BRASS/BRONZE BALL VALVES											
51	1	2.5	4.3	8	12	18	32	52	-	-	-
54/55	.5	1	3	6	11	17	28	37	62	110	-
54P/55P	-	-	3	6	11	17	28	37	-	-	-
56/57	2	2.5	5	11	24	35	74	128	208	366	565
58/59	-	4.7	8.5	22	46	77	140	236	395	-	-
62/63	-	-	22	44	74	132	222	368	-	-	-
62G	-	-	-	-	-	-	222	368	-	-	-
68/69	4.1	4.1	22	44	74	132	225	375	560	900	-
68AB	-	-	22	44	74	-	-	-	-	-	-
68AD/69AD	4.1	4.1	22	44	74	132	225	375	560	900	-
68C/69C	-	-	22	44	-	-	-	-	-	-	-
68M	4.1	4.1	22	44	74	132	225	375	560	900	-
68O/69O	4.1	4.1	22	44	74	-	-	-	-	-	-
68P	4.1	4.1	22	44	74	132	225	375	560	900	-
68PM	4.1	4.1	22	44	74	132	225	375	560	900	-
68S	4.1	4.1	22	44	74	132	225	375	-	-	-
68U/69U	4.1	4.1	22	44	74	132	225	375	-	-	-
CARBON & STAINLESS STEEL BALL VALVES											
35	4	4.5	5	11	24	35	74	128	-	-	-
39	4.1	4.1	7.7	16	26	33	58	120	-	-	-
49M	4.1	4.1	7.7	16	26	33	58	120	-	-	-
50	1	2.5	4.3	8	12	18	32	52	-	-	-
52	2.2	2.3	4.3	8	12	18	32	53	-	-	-
53F	-	-	22	45	75	133	229	380	-	-	-
65	4	4.5	5	11	24	35	74	128	-	-	-
119/129	2.2	2.3	4.3	8	12	18	32	53	-	-	-
217/219	4	4.5	5	11	24	35	74	128	-	-	-
227/229	4	4.5	5	11	24	35	74	128	-	-	-
237/239	4	4.5	5	11	24	35	74	128	-	-	-
247/249	4	4.5	5	11	24	35	74	128	-	-	-
FLANGED CAST IRON BALL VALVES											
CODE NO.	2	2 1/2	3	4	-	6	8	10	-	-	-
90	347	675	1130	1920		4260	8420	-	-	-	-
91	-	-	-	-	-	1550	1660	3290	-	-	-

BALL VALVE
OPERATING TORQUE DATA

FIGURE NUMBER	SIZE	101-600 PSI	601-1000 PSI	1001-1500 PSI	1501-2000 PSI
39	1/4-3/8 1/2 3/4 1 1 1/4 1 1/2 2	33 41 60 77 118 187 336		 230 357 643	69 86 128 172
49M	1/4-3/8 1/2 3/4 1 1 1/4 1 1/2 2	33 41 60 77 118 187 336		 230 357 643	69 86 128 172
53F 601-800 max.	1/2 3/4 1 1 1/4 1 1/2 2	66 85 109 207 363 579	601-800 PSI 83 108 142 283 500 802		
55P	1/2 3/4 1	45 70 80			
54P	1/2 3/4 1 1 1/4 1 1/2 2	45 70 80 108 170 240			
62/63	1/4-3/8 1/2 3/4 1 1 1/4 1 1/2 2 2 1/2	29 35 52 81 104 173 196 -			
68P	1/4-3/8 1/2 3/4 1 1 1/4 1 1/2 2 2 1/2 3 4	29 35 40 52 75 126 227 - - -			

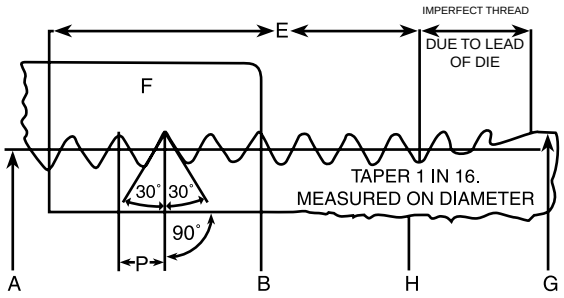
BALL VALVE
OPERATING TORQUE DATA

FIGURE NUMBER	SIZE	101-600 PSI	601-1000 PSI	1001-1500 PSI	1501-2000 PSI
68PM	1/4-3/8	35			
	1/2	43			
	3/4	51			
	1	65			
	1 1/4	91			
	1 1/2	164			
	2	349			
	2 1/2	965			
	3	1892			
	4	2704			
119/129	1/4	21	23	27	31
	3/8	27	32	39	45
	1/2	42	45	52	58
	3/4	62	65	71	78
	1	97	104	117	130
	1 1/4	112	123	143	-
	1 1/2	153	169	195	-
	2	195	208	234	-
217/219 227/229 237/239 247/249	1/4	27	32	39	45
	3/8	42	45	52	58
	1/2	62	65	71	78
	3/4	97	104	117	130
	1	112	123	143	162
	1 1/4	153	169	195	-
	1 1/2	195	208	234	-
	2	208	234	260	-

SATURATED STEAM TABLE
PRESSURE/TEMPERATURE

Vacuum Inches Mercury	Pressure Absolute (P.S.I.A.)	Temperature °F	Pressure Gauge (P.S.I.G.)	Temperature °F	Pressure Gauge (P.S.I.G.)	Temperature °F	Pressure Gauge (P.S.I.G.)	Temperature °F	Pressure Gauge (P.S.I.G.)	Temperature °F
29.74	0.089	32.0	0	212.0	135	358.3	285	417.2	570	483.4
29	0.451	76.5	2	218.5	140	360.8	290	418.7	580	485.2
28	0.942	99.7	4	224.4	145	363.4	295	420.2	590	487.0
27	1.43	114.0	6	229.8	–	–	–	–	–	–
26	1.92	124.6	8	234.6	**150**	**365.9**	**300**	**421.7**	600	488.8
–	–	–	–	–	155	368.3	310	424.6	650	497.4
25	2.42	133.3	10	239.0	160	370.6	320	427.4	700	505.4
24	2.91	140.3	15	249.7	165	372.9	330	430.3	–	–
23	3.40	146.3	20	258.8	170	375.2	340	433.0	750	513.1
22	3.89	151.7	–	–	–	–	–	–	800	520.3
21	4.38	156.5	25	266.8	175	377.4	350	435.6	850	527.3
			30	274.0	180	379.5	360	438.2	900	533.9
20	4.87	161.0	35	280.6	185	381.7	370	440.8	950	540.3
19	5.36	165.2	40	286.7	190	383.7	380	443.3	–	–
18	5.85	168.9	45	292.4	195	385.8	390	445.7	1000	546.4
17	6.35	172.5	–	–	–	–	–	–	–	–
16	6.84	175.8	50	297.7	200	387.8	400	448.1	–	–
–	–	–	55	302.6	205	389.7	410	450.5	–	–
15	7.33	178.9	60	307.3	210	391.7	420	452.8	–	–
14	7.82	181.8	65	311.8	215	393.6	430	455.1	–	–
13	8.31	184.6	70	316.0	220	395.4	440	457.3	–	–
12	8.80	187.2	–	–	–	–	–	–	–	–
11	9.29	189.7	75	320.0	225	397.3	450	459.5	–	–
–	–	–	80	323.9	230	399.1	460	461.7	–	–
10	9.78	192.1	85	327.6	235	400.8	470	463.8	–	–
9	10.27	194.4	90	331.1	240	402.6	480	465.9	–	–
8	10.77	196.7	95	334.6	245	404.3	490	468.0	–	–
7	11.26	198.8	–	–	–	–	–	–	–	–
6	11.75	200.9	100	337.9	**250**	**406.0**	500	470.0	–	–
–	–	–	105	341.1	255	407.7	510	472.0	–	–
5	12.24	202.9	110	344.1	260	409.3	520	474.0	–	–
4	12.73	204.8	115	347.1	265	410.9	530	475.9	–	–
3	13.22	206.7	120	350.0	270	412.5	540	477.8	–	–
2	13.71	208.5	–	–	–	–	–	–	–	–
1	14.20	210.3	**125**	**352.8**	275	414.1	550	479.7	–	–
0	14.696	212.0	130	355.6	280	415.7	560	481.6	–	–

ASME/ANSI STANDARD IRON PIPE
TAPER THREADS



A = G–(0.05 + 1.1) P
B = A + .0625 F
E = P(0.8G + 6.8)
Depth of Thread = 0.8 P
Total Taper 3/4 in. per foot

(Inch)

	A	B	E	F	G	H		P	
Nominal Size of Pipe	Pitch Dia. at End of Pipe	Pitch Dia. at Gauging Notch	Length of Effective Thread	Normal Engagement by Hand Between Male and Female Thread	Outside Dia. of Pipe	Actual Inside Dia. of Pipe	Number of Threads	Pitch of Thread	Depth of Thread
1/8	.36351	.37476	.2638	.180	.405	.269	27	.0370	.02963
1/4	.47739	.48989	.4018	.200	.540	.364	18	.0556	.04444
3/8	.61201	.62701	.4078	.240	.675	.493	18	.0556	.04444
1/2	.75843	.77843	.5337	.320	.840	.622	14	.0714	.05714
3/4	.96768	.98886	.5457	.339	1.050	.824	14	.0714	.05714
1	1.21363	1.23863	.6828	.400	1.315	1.049	11 1/2	.0870	.06956
1 1/4	1.55713	1.58338	.7068	.420	1.660	1.380	11 1/2	.0870	.06956
1 1/2	1.79609	1.82234	.7235	.420	1.900	1.610	11 1/2	.0870	.06956
2	2.26902	2.29627	.7565	.436	2.375	2.067	11 1/2	.0870	.06956
2 1/2	2.71953	2.76216	1.1375	.682	2.875	2.469	8	.1250	.10000
3	3.34063	3.38850	1.2000	.766	3.500	3.068	8	.1250	.10000
3 1/2	3.83750	3.88881	1.2500	.821	4.000	3.548	8	.1250	.10000
4	4.33438	4.38713	1.3000	.844	4.500	4.026	8	.1250	.10000
5	5.39073	5.44929	1.4063	.937	5.563	5.047	8	.1250	.10000
6	6.44609	6.50597	1.5125	.958	6.625	6.065	8	.1250	.10000
8	8.43359	8.50003	1.7125	1.063	8.625	7.981	8	.1250	.10000
10	10.54531	10.62094	1.9250	1.210	10.750	10.020	8	.1250	.10000
12	12.53281	12.61781	2.1250	1.360	12.750	12.000	8	.1250	.10000

Data abstracted from ASME/ANSI Standard B1.20.1–1983 – Gages and Gaging for Unified Inch Screw Threads.

ASME/ANSI STANDARD COPPER WATER TUBE & SOLDER-JOINT ENDS - VALVES & FITTINGS

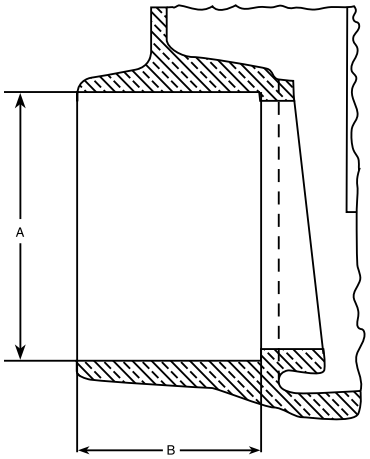
SERVICE RECOMMENDATIONS

Seamless copper water tube is used for such services as steam, water or air and oil, gas or similar fluids.

Type K Tube is especially recommended for underground use and where service conditions are severe. It is also recommended for general plumbing and heating systems and is used for gas, oil and steam.

Type L Tube is for interior use in general plumbing and heating work.

Type M Tube is for use with solder-joint fittings only, for waste, vent and interior drainage lines and other non-pressure applications.



As steam installations, the successful application of copper tube depends upon weight of tube and solder used when making joints. The solder must have a melting point high enough to remain unaffected by the temperature of the steam.

HARD COPPER TUBE: Hard copper tube is intended primarily for use in straight lengths. Without proper bending equipment, its use is not recommended for field bending.

SOFT COPPER TUBE: This tube can be bent without special bending equipment and is recommended for use when bends must be made in the field, as in concealed replacement work. Soft copper tubing may become flattened or distorted when being handled or while in transit. The ends of this tube should therefore be sized to assure a tight soldered joint.

Type K (hard and soft) and Type L (hard and soft) in sizes 3/8" to 12" and Type M (hard) in sizes 2 1/2" to 12" conform to ANSI Standard for Copper Water Tube, H23.1. Also conforms to Federal Specification WW-T-799.

DIMENSIONS OF SOLDER-JOINT ENDS

Standard Water Tube Size Inches	A Inside Diameter		B Depth
	Min. Inches	Max. Inches	Min. Inches
1/4	.377	.381	5/16
3/8	.502	.506	3/8
1/2	.627	.631	1/2
3/4	.877	.881	3/4
1	1.128	1.132	29/32
1 1/4	1.378	1.382	31/32
1 1/2	1.628	1.633	1 3/32
2	2.128	2.133	1 11/32
2 1/2	2.628	2.633	1 15/32
3	3.128	3.133	1 21/32
3 1/2	3.628	3.633	1 29/32
4	4.128	4.133	2 5/32
5	5.128	5.133	2 21/32
6	6.128	6.133	3 3/32
8	8.128	8.133	3 31/32

TUBE DIMENSIONS AND WEIGHTS

Nominal Size of Tube In.	Actual Outside Diam. of Tube In.	Type K Tube		Type L Tube		Type M Tube	
		Wall Thickness In.	Wgt. Per Foot Lbs.	Wall Thickness In.	Wgt. Per Foot Lbs.	Wall Thickness In.	Wgt. Per Foot Lbs.
1/4	3/8	—	—	.030	.126	—	—
3/8	1/2	.049	.269	.035	.198	—	—
1/2	5/8	.049	.344	.040	.285	—	—
3/4	7/8	.065	.641	.045	.455	—	—
1	1 1/8	.065	.839	.050	.655	—	—
1 1/4	1 3/8	.065	1.04	.055	.884	.042	.68
1 1/2	1 5/8	.072	1.36	.060	1.14	.049	.94
2	2 1/8	.083	2.06	.070	1.75	.058	1.46
2 1/2	2 5/8	.095	2.93	.080	2.48	.065	2.03
3	3 1/8	.109	4.00	.090	3.33	.072	2.68
3 1/2	3 5/8	.120	5.12	.100	4.29	.083	3.58
4	4 1/8	.130	6.51	.110	5.38	.095	4.66
5	5 1/8	.160	9.67	.125	7.61	.109	6.66
6	6 1/8	.192	13.90	.140	10.20	.122	8.92
8	8 1/8	.271	25.90	.200	19.30	.170	16.50
10	10 1/8	.338	40.30	.250	30.10	.212	25.60
12	12 1/8	.405	57.80	.280	40.40	.254	36.70

Data extracted from ASME/ANSI Standard 16.18–1984 (R1994) – Cast Copper Alloy Solder Joint Pressure Fittings.

VALVE INSTALLATION TIPS FOR A SOUND SOLDER JOINT

Kitz solder joint copper alloy ball, gate, globe and check valves are designed to be soft soldered into lines without disassembly, using a low temperature solder 420°F. Other solders, 95/5 tin antimony (460°F) or 96/4 tin silver (430°F) can be used, however, extreme caution must be used to prevent seat and packing damage. Carefully following the succeeding procedure will assure a durable solder connection with copper tubing for servicing distribution of water, oil and gas.

1. Solder

Recommended:

Soft solders having a maximum melting point of 420°F.

Others: 95-5 tin-antimony (460°F)
96.5-3.5 tin-silver (430°F)

2. Soldering Procedure

(1) Cut tube end square; ream, burr and size.
(2) Polish tube and cup to a bright metal finish, using sand cloth, wire brush and clean with cloth.
(3) Apply flux sparingly and evenly to polished surface of tube. No flux need be applied to solder cup.
(4) Fully open valve before applying heat. Insert tube into valve socket until it contacts internal shoulder of valve socket. Rotate the tube a few times to evenly distribute flux.
(5) Soldering procedure:
  (a) Cover the bonnet or valve body with a wet cloth to prevent gland packing and seat damage.
  (b) Preheat the tube evenly, using an open-flame torch.
  (c) Heat the joint area to an adequate temperature; remove heat and feed solder around the joint.
  (d) Check to make sure melted solder is flowing into the jointed surfaces.
  (e) Visually check joint for continuous fillet.
  (f) Cool the jointed area with a wet cloth as soon as the solder becomes solid.
  (g) After cooling, remove solder and flux to prevent surface corrosion.
  (h) Flush the tube and valve interiors with water to remove internal residue, as soon as piping installation is complete.

CAUTION

(1) *Do* apply wet cloth to body of valve or bonnet to prevent damage to seat and packing during soldering.
(2) *Do not* apply heat to the valve body to prevent damage to seats and packing.
(3) *Do* minimize heating time for solder work to prevent damage to seats and packing
(4) *Do not* forget to retighten packing nut after valve cools down for leak-free performance.
(5) *Do* remember that Service Pressure and Temperature of valve are limited by the properties of the solder.
(6) *Do not* exceed a service velocity greater than 6 feet per second to prevent erosion of copper tube.

CONVERSION TABLES

LENGTH

1 in.	=	25.4 mm
1 mm	=	.03937 in.
1 ft.	=	30.48 cm.
1 meter	=	3.28083 ft.
1 micron	=	.001 mm.

AREA

1 sq. in.	=	6.4516 sq. cm.
1 sq. ft.	=	929.03 sq. cm.
1 sq. cm.	=	0.155 sq. in.
1 sq. cm.	=	0.0010764 sq. ft.

VOLUME

1 cu. in.	=	16.387 cu. cm.
1 cu. ft.	=	1728 cu. in.
1 cu. lt.	=	7.4805 U.S. gal.
1 cu. lt.	=	6.229 British gal.
1 cu. lt.	=	28.317 liters
1 U.S. gal.	=	0.1337 cu. lt.
1 U.S. gal.	=	231 cu. in.
1 U.S. gal.	=	3.785 liters
1 British gal.	=	1.20094 U.S. gal.
1 British gal.	=	277.3 cu. in.
1 British gal.	=	4.546 liters
1 liter	=	61.023 cu. in.
1 liter	=	0.03531 cu. ft.
1 liter	=	0.2642 U.S. gal.

WEIGHT

1 ounce av.	=	28.35 g.
1 lb. av.	=	453.59 g.
1 gram	=	0.03527 oz. av.
1 kg.	=	2.205 lb. av.
1 cu. ft. of water	=	62.425 lb.
1 U.S. gal. of water	=	8.33 lb.
1 cu. in. of water	=	0.0361 lb.
1 British gal. of water	=	10.04 lb.
1 cu. ft. of air at 32°F & 1 atm	=	0.080728 lb.

VELOCITY

1 ft. per sec.	=	30.48 cm. per sec.
1 cm. per sec.	=	.032808 ft. per sec.

FLOW

1 cu. ft. per sec.	=	448.83 gal. per min.
1 cu. ft. per sec.	=	1699.3 liters per min.
1 U.S. gal. per min.	=	0.002228 cu. ft. per sec.
1 U.S. gal. per min.	=	0.06308 liters per sec.
1 cu. cm. per sec.	=	0.0021186 cu. ft. per min.

DENSITY

1 lb. per cu. ft.	=	16.018 kg. per cu. meter
1 lb. per cu. ft.	=	.0005787 lb. per cu. in.
1 kg. per cu. meter	=	0.06243 lb. per cu. ft.
1 g. per cu. cm.	=	0.03613 lb. per cu. in.

VISCOSITY

1 Centipoise	=	.000672 lb. per ft. sec.
1 Centistoke	=	.00001076 sq. ft. per sec.

PRESSURE

1 in. of water	=	0.03613 lb. per sq. in.
1 in. of water	=	0.07355 in. of Hg.
1 ft. of water	=	0.4335 lb. per sq. in.
1 ft. of water	=	0.88265 in. of Hg.
1 in. of mercury	=	0.49116 lb. per sq. in.
1 in. of mercury	=	13.596 in. of water
1 in. of mercury	=	1.13299 ft. of water
1 atmosphere	=	14.696 lb. per sq. in. (PSIA)
1 atmosphere	=	760 mm. of Hg.
1 atmosphere	=	29.921 in. of Hg.
1 atmosphere	=	33.899 ft. of water
1 lb. per sq. in.	=	27.70 in. of water
1 lb. per sq. in.	=	2.036 in. of Hg.
1 lb. per sq. in.	=	.0703066 kg. per sq. cm.
1 kg. per sq. cm.	=	14.223 lb. per sq. in.
1 dyne per sq. cm.	=	.0000145 lb. per sq. in.
1 micron	=	.00001943 lb. per sq. in.
PSI to Bar		PSI x 0.0689

ENERGY

1 B.T.U.	=	777.97 ft. lbs.
1 erg	=	9.4805×10^{11} B.T.U.
1 erg	=	7.3756×10^{8} ft. lbs.
1 kilowatt hour	=	2.655×10^{6} ft. lbs.
1 kilowatt hour	=	1.3410 h.p. hr.
1 kg. calorie	=	3.968 B.T.U.

POWER

1 horsepower	=	33,000 ft. lb. per min.
1 horsepower	=	550 ft. lb. per sec.
1 horsepower	=	2,546.5 B.T.U. per hr.
1 horsepower	=	745.7 watts
1 watt	=	0.00134 horsepower
1 watt	=	44.26 ft. lbs. per min.

TEMPERATURE

Temperature Fahrenheit	(F)	=	9/5 Centigrade (C) + 32 = 9/4 R + 32
Temperature Centigrade	(C)	=	5/9 Fahrenheit (F) – 32 = 5/4 R
Temperature Reaumur	(R)	=	4/9 Fahrenheit (F) – 32 = 4/5 C
Absolute Temperature Centigrade or Kelvin	(K)	=	Degrees C + 273.16
Absolute Temperature Fahrenheit or Rankine	(R)	=	Degrees F + 459.69
Fahrenheit to Centigrade		=	C = (F – 32) / 1.8

HEAT TRANSFER

1 B.T.U. per sq. ft.	=	.2712 g. cal. per sq. cm.
1 g. calorie per sq. cm.	=	3.687 B.T.U. per sq. ft.
1 B.T.U. per hr. per sq. ft. per °F	=	4.88 kg. cal. per hr. per sq. m. per °C
1 Kg. cal. per hr. per sq. m. per °C	=	.205 B.T.U. per hr. per sq. ft. per °F
1 Boiler Horsepower	=	33479 B.T.U. per hr.

CONVERSION CHART
FRACTION – DECIMAL – MILLIMETER

Fraction	Decimal	Millimeter
1/64	.015625	0.39688
1/32	.03125	0.79375
3/64	.046875	1.19063
1/16	.0625	1.58750
5/64	.078125	1.98438
3/32	.09375	2.38125
7/64	.109375	2.77813
1/8	.125	3.17501
9/64	.140625	3.57188
5/32	.15625	3.96876
11/64	.171875	4.36563
3/16	.1875	4.76251
13/64	.203125	5.15939
7/32	.21875	5.55626
15/64	.234375	5.95314
1/4	.25	6.35001
17/64	.265625	6.74689
9/32	.28125	7.14376
19/64	.296875	7.54064
5/16	.3125	7.93752
21/64	.328125	8.33439
11/32	.34375	8.73127
23/64	.359375	9.12814
3/8	.375	9.52502
25/64	.390625	9.92189
13/32	.40625	10.31877
27/64	.421875	10.71565
7/16	.4375	11.11252
29/64	.453125	11.50940
15/32	.46875	11.90627
31/64	.484375	12.30315
1/2	.5	12.70002
33/64	.515625	13.09690
17/32	.53125	13.49378
35/64	.546875	13.89065
9/16	.5625	14.28753
37/64	.578125	14.68440
19/32	.59375	15.08128
39/64	.609375	15.47816
5/8	.625	15.87503
41/64	.640625	16.27191
21/32	.65625	16.66878
43/64	.671875	17.06566
11/16	.6875	17.46253
45/64	.703125	17.85941
23/32	.71875	18.25629
47/64	.734375	18.65316
3/4	.75	19.05004
49/64	.765625	19.44691
25/32	.78125	19.84379
51/64	.796875	20.24066
13/16	.8125	20.63754
53/64	.828125	21.03442
27/32	.84375	21.43129
55/64	.859375	21.82817
7/8	.875	22.22504
57/64	.890625	22.62192
29/32	.90625	23.01880
59/64	.921875	23.41567
15/16	.9375	23.81255
61/64	.953125	24.20942
31/32	.96875	24.60630
63/64	.984375	25.00317
1	1.0	25.40005

NOTE: To convert from inches to millimeters, multiply by 25.4
To convert from millimeters to inches, multiply by .03937.
Decimal conversion, 2.54 millimeters equals .10 of an inch.

TEMPERATURE CONVERSION

DEGREES – Fahrenheit to Centigrade

-°C = 5/9 (°F+32)

+°C = 5/9 (°F-32)

DEGREES – Centigrade to Fahrenheit

-°F = (9/5 x °C) - 32

+°F =(9/5 x °C) + 32

-459.4 to 12			13 to 72			73 to 260			265 to 620			630 to 2,400		
	°C	°F		°C	°F		°C	°F		°C	°F		°C	°F
°C	°F		°C	°F		°C	°F		°C	°F		°C	°F	
-273	-459.4		- 10.6	13	55.4	22.8	73	163.4	129	265	509	332	630	1,166
-268	-450		- 10.0	14	57.2	23.3	74	165.2	132	270	518	338	640	1,184
-262	-440		- 9.4	15	59.0	23.9	75	167.0	135	275	527	343	650	1,202
-257	-430		- 8.9	16	60.8	24.4	76	168.8	138	280	536	349	660	1,220
-251	-420		- 8.3	17	62.6	25.0	77	170.6	141	285	545	354	670	1,238
-246	-410		- 7.8	18	64.4	25.6	78	172.4	143	290	554	360	680	1,256
-240	-400		- 7.2	19	66.2	26.1	79	174.2	146	295	563	366	690	1,274
-234	-390		- 6.7	20	68.0	26.7	80	176.0	149	300	572	371	700	1,292
-229	-380		- 6.1	21	69.8	27.2	81	177.8	152	305	581	377	710	1,310
-223	-370		- 5.6	22	71.6	27.8	82	179.6	154	310	590	382	720	1,328
-218	-360		- 5.0	23	73.4	28.3	83	181.4	157	315	599	388	730	1,346
-212	-350		- 4.4	24	75.2	28.9	84	183.2	160	320	608	393	740	1,364
-207	-340		- 3.9	25	77.0	29.4	85	185.0	163	325	617	399	750	1,382
-201	-330		- 3.3	26	78.8	30.0	86	186.8	166	330	626	404	760	1,400
-196	-320		- 2.8	27	80.6	30.6	87	188.6	168	335	635	410	770	1,418
-190	-310		- 2.2	28	82.4	31.1	88	190.4	171	340	644	416	780	1,436
-184	-300		- 1.7	29	84.2	31.7	89	192.2	174	345	653	421	790	1,454
-179	-290		- 1.1	30	86.0	32.2	90	194.0	177	350	662	427	800	1,472
-173	-280		- 0.6	31	87.8	32.8	91	195.8	179	355	671	432	810	1,490
-169	-273	-459.4	0.0	32	89.6	33.3	92	197.6	182	360	680	438	820	1,508
-168	-270	-454	0.6	33	91.4	33.9	93	199.4	185	365	689	443	830	1,526
-162	-260	-436	1.1	34	93.2	34.4	94	201.2	188	370	698	449	840	1,544
-157	-250	-418	1.7	35	95.0	35.0	95	203.0	191	375	707	454	850	1,562
-151	-240	-400	2.2	36	96.8	35.6	96	204.8	193	380	716	460	860	1,580
-146	-230	-382	2.8	37	98.6	36.1	97	206.6	196	385	725	466	870	1,598
-140	-220	-364	3.3	38	100.4	36.7	98	208.4	199	390	734	471	880	1,616
-134	-210	-346	3.9	39	102.2	37.2	99	210.2	202	395	743	477	890	1,634
-129	-200	-328	4.4	40	104.0	37.8	100	212.0	214	400	752	482	900	1,652
-123	-190	-310	5.0	41	105.8	41	105	221	207	405	761	488	910	1,670
-118	-180	-292	5.6	42	107.6	43	110	230	210	410	770	493	920	1,688
-112	-170	-274	6.1	43	109.4	46	115	239	213	415	779	499	930	1,706
-107	-160	-256	6.7	44	111.2	49	120	248	216	420	788	504	940	1,724
-101	-150	-238	7.2	45	113.0	52	125	257	218	425	797	510	950	1,742
- 96	-140	-220	7.8	46	114.8	54	130	266	221	430	806	516	960	1,760
- 90	-130	-202	8.3	47	116.6	57	135	275	224	435	815	521	970	1,778
- 84	-120	-184	8.9	48	118.4	60	140	284	227	440	824	527	980	1,796
- 79	-110	-166	9.4	49	120.2	63	145	293	229	445	833	532	990	1,814
- 73	-100	-148	10.0	50	122.0	66	150	302	232	450	842	538	1,000	1,832
- 68	- 90	-130	10.6	51	123.8	68	155	311	235	455	851	549	1,020	1,868
- 62	- 80	-112	11.1	52	125.6	71	160	320	238	460	860	560	1,040	1,904
- 57	- 70	- 94	11.7	53	127.4	74	165	329	241	465	869	571	1,060	1,940
- 51	- 60	- 76	12.2	54	129.2	77	170	338	243	470	878	582	1,080	1,976
- 46	- 50	- 58	12.8	55	131.0	79	175	347	246	475	887	593	1,100	2,012
- 40	- 40	- 40	13.3	56	132.8	82	180	356	249	480	896	604	1,120	2,048
- 34	- 30	- 22	13.9	57	134.6	85	185	365	252	485	905	616	1,140	2,084
- 29	- 20	- 4	14.4	58	136.4	88	190	374	254	490	914	627	1,160	2,120
- 23	- 10	14	15.0	59	138.2	91	195	383	257	495	923	638	1,180	2,156
- 17.8	0	32	15.6	60	140.0	93	200	392	260	500	932	649	1,200	2,192
- 17.2	1	33.8	16.1	61	141.8	96	205	401	266	510	950	704	1,300	2,372
- 16.7	2	35.6	16.7	62	143.6	99	210	410	271	520	968	760	1,400	2,552
- 16.1	3	37.4	17.2	63	145.4	102	215	419	277	530	986	816	1,500	2,732
- 15.6	4	39.2	17.8	64	147.2	104	220	428	282	540	1,004	871	1,600	2,912
- 15.0	5	41.0	18.3	65	149.0	107	225	437	288	550	1,022	927	1,700	3,092
- 14.4	6	42.8	18.9	66	150.8	110	230	446	293	560	1,040	982	1,800	3,272
- 13.9	7	44.6	19.4	67	152.6	113	235	455	299	570	1,058	1,038	1,900	3,452
- 13.3	8	46.4	20.0	68	154.4	116	240	464	304	580	1,076	1,093	2,000	3,632
- 12.8	9	48.2	20.6	69	156.2	118	245	473	310	590	1,094	1,149	2,100	3,812
- 12.2	10	50.0	21.1	70	158.0	121	250	482	316	600	1,112	1,204	2,200	3,992
- 11.7	11	51.8	21.7	71	159.8	124	255	491	321	610	1,130	1,260	2,300	4,172
- 11.1	12	53.6	22.2	72	161.6	127	260	500	327	620	1,148	1,316	2,400	4,352

CONVERSION CHART

PRESSURE

1 kgs./cm^2 = 14.223 lbs./in.^{2} 1 lbs./In.^{2} = 0.0703 kgs./cm^2

1 to 60			61 to 200			205 to 700			710 to 1,600			1,620 to 2,800		
	kgs./cm^2	lbs./in.^{2}		kgs./cm^2	lbs./in.^{2}		kgs./cm^2	lbs./in.^{2}		kgs./cm^2	lbs./in.^{2}		kgs./cm^2	lbs./in.^{2}
kgs./cm.^{2}	lbs./in.^{2}		kgs./cm.^{2}	lbs./in.^{2}		kgs./cm.^{2}	lbs./in.^{2}		kgs./cm.^{2}	lbs./in.^{2}		kgs./cm.^{2}	lbs./in.^{2}	
0.07	1	14.22	4.29	61	868	14.41	205	2,916	49.92	710	10,098	113.90	1,620	23,041
0.14	2	28.45	4.36	62	882	14.76	210	2,987	50.62	720	10,241	115.30	1,640	23,326
0.21	3	42.67	4.43	63	896	15.12	215	3,058	51.32	730	10,383	116.71	1,660	23,610
0.28	4	56.89	4.50	64	910	15.47	220	3,129	52.03	740	10,525	118.12	1,680	23,895
0.35	5	71.12	4.57	65	925	15.82	225	3,200	52.73	750	10,667	119.52	1,700	24,179
0.42	6	85.34	4.64	66	939	16.17	230	3,271	53.43	760	10,809	120.93	1,720	24,464
0.49	7	99.56	4.71	67	953	16.52	235	3,342	54.14	770	10,952	122.33	1,740	24,748
0.56	8	113.78	4.78	68	967	16.87	240	3,414	54.84	780	11,094	123.74	1,760	25,032
0.63	9	128.01	4.85	69	981	17.23	245	3,485	55.54	790	11,236	125.15	1,780	25,317
0.70	10	142.23	4.92	70	996	17.58	250	3,556	56.25	800	11,378	126.56	1,800	25,601
0.77	11	156.45	4.99	71	1,010	17.93	255	3,627	56.95	810	11,521	127.96	1,820	25,886
0.84	12	170.68	5.06	72	1,024	18.28	260	3,698	57.65	820	11,663	129.36	1,840	26,170
0.91	13	184.90	5.13	73	1,038	18.63	265	3,769	58.35	830	11,805	130.76	1,860	26,455
0.98	14	199.12	5.20	74	1,053	18.98	270	3,840	59.06	840	11,947	132.18	1,880	26,739
1.05	15	213.35	5.27	75	1,067	19.33	275	3,911	59.76	850	12,090	133.58	1,900	27,024
1.12	16	227.57	5.34	76	1,081	19.69	280	3,982	60.46	860	12,232	134.99	1,920	27,308
1.20	17	241.79	5.41	77	1,095	20.04	285	4,054	61.17	870	12,374	136.39	1,940	27,593
1.27	18	256.01	5.48	78	1,109	20.39	290	4,125	61.87	880	12,516	137.80	1,950	27,877
1.34	19	270.24	5.55	79	1,124	20.74	295	4,196	62.57	890	12,658	139.21	1,980	28,162
1.41	20	284.46	5.62	80	1,138	21.09	300	4,267	63.28	900	12,801	140.61	2,000	28,446
1.48	21	298.68	5.69	81	1,152	21.80	310	4,409	63.98	910	12,943	142.02	2,020	28,730
1.55	22	312.91	5.77	82	1,166	22.50	320	4,551	64.68	920	13,085	143.43	2,040	29,015
1.62	23	327.13	5.84	83	1,181	23.20	330	4,694	65.39	930	13,227	144.83	2,060	29,299
1.69	24	341.35	5.91	84	1,195	23.90	340	4,836	66.09	940	13,370	146.24	2,080	29,584
1.76	25	355.58	5.98	85	1,209	24.61	350	4,978	66.79	950	13,512	147.64	2,100	29,868
1.83	26	369.80	6.05	86	1,223	25.31	360	5,120	67.49	960	13,654	149.05	2,120	30,153
1.90	27	384.02	6.12	87	1,237	26.01	370	5,263	68.20	970	13,796	150.46	2,140	30,437
1.97	28	398.24	6.19	88	1,252	26.72	380	5,405	68.90	980	13,939	151.86	2,160	30,722
2.04	29	412.47	6.26	89	1,266	27.42	390	5,547	69.60	990	14,081	153.27	2,180	31,006
2.11	30	426.69	6.33	90	1,280	28.12	400	5,689	70.31	1,000	14,223	154.67	2,200	31,291
2.18	31	440.91	6.40	91	1,294	28.83	410	5,831	71.71	1,020	14,507	156.08	2,220	31,575
2.25	32	455.14	6.47	92	1,309	29.53	420	5,974	73.12	1,040	14,792	157.49	2,240	31,860
2.32	33	469.36	6.54	93	1,323	30.23	430	6,116	74.52	1,060	15,076	158.89	2,260	32,144
2.39	34	483.58	6.61	94	1,337	30.93	440	6,258	75.93	1,080	15,361	160.30	2,280	32,428
2.46	35	497.81	6.68	95	1,351	31.64	450	6,400	77.34	1,100	15,645	161.71	2,300	32,713
2.53	36	512.03	6.75	96	1,365	32.34	460	6,543	78.74	1,120	15,930	163.11	2,320	32,997
2.60	37	526.25	6.82	97	1,380	33.04	470	6,685	80.15	1,140	16,214	164.52	2,340	33,282
2.67	38	540.47	6.89	98	1,394	33.75	480	6,827	81.56	1,160	16,499	165.92	2,360	33,566
2.74	39	554.70	6.96	99	1,408	34.45	490	6,969	82.96	1,180	16,783	167.33	2,380	33,851
2.81	40	568.92	7.03	100	1,422	35.15	500	7,112	84.37	1,200	17,068	168.74	2,400	34,135
2.88	41	583.14	7.38	105	1,493	35.86	510	7,254	85.77	1,220	17,352	170.14	2,420	34,420
2.95	42	597.40	7.73	110	1,565	36.56	520	7,396	87.18	1,240	17,637	171.55	2,440	34,704
3.02	43	611.59	8.09	115	1,636	37.26	530	7,538	88.59	1,260	17,921	172.95	2,460	34,989
3.09	44	625.81	8.44	120	1,707	37.97	540	7,680	89.99	1,280	18,205	174.36	2,480	35,273
3.16	45	640.04	8.79	125	1,778	38.67	550	7,823	91.40	1,300	18,490	175.77	2,500	35,558
3.23	46	654.26	9.14	130	1,849	39.37	560	7,965	92.80	1,320	18,774	177.16	2,520	35,842
3.30	47	668.48	9.49	135	1,920	40.07	570	8,107	94.21	1,340	19,059	178.56	2,540	36,126
3.37	48	682.70	9.84	140	1,991	40.78	580	8,249	95.62	1,360	19,343	180.00	2,560	36,411
3.45	49	696.93	10.19	145	2,062	41.48	590	8,392	97.02	1,380	19,628	181.37	2,580	36,695
3.52	50	711.15	10.55	150	2,133	42.18	600	8,534	98.43	1,400	19,912	182.78	2,600	36,980
3.59	51	725.37	10.90	155	2,205	42.89	610	8,676	99.84	1,420	20,197	184.19	2,620	37,264
3.66	52	739.60	11.25	160	2,276	43.59	620	8,818	101.24	1,440	20,481	185.59	2,640	37,549
3.73	53	753.82	11.60	165	2,347	44.29	630	8,960	102.65	1,460	20,766	187.00	2,660	37,833
3.80	54	768.04	11.95	170	2,418	45.00	640	9,103	104.05	1,480	21,050	188.40	2,680	37,118
3.87	55	782.27	12.30	175	2,489	45.70	650	9,245	105.46	1,500	21,335	189.81	2,700	38,402
3.94	56	796.49	12.66	180	2,560	46.40	660	9,387	106.87	1,520	21,619	191.22	2,720	38,687
4.01	57	810.71	13.01	185	2,631	47.11	670	9,529	108.27	1,540	21,903	192.62	2,740	38,971
4.08	58	824.93	13.36	190	2,702	47.81	680	9,672	109.68	1,560	22,188	194.03	2,760	39,255
4.15	59	839.16	13.71	195	2,773	48.51	690	9,814	111.08	1,580	22,472	195.43	2,780	39,540
4.22	60	853.38	14.06	200	2,845	49.21	700	9,956	112.49	1,600	22,757	196.84	2,800	39,824

WEIGHT CONVERSION

POUNDS TO KILOGRAMS

(1 pound = 0.4536 kilogram)

Pounds	0	1	2	3	4	5	6	7	8	9
0	0.00	0.45	0.91	1.36	1.81	2.27	2.72	3.18	3.63	4.08
10	4.54	4.99	5.44	5.90	6.35	6.80	7.26	7.71	8.16	8.62
20	9.07	9.53	9.98	10.43	10.89	11.34	11.79	12.25	12.70	13.15
30	13.61	14.06	14.52	14.97	15.42	15.88	16.33	16.78	17.24	17.69
40	18.14	18.60	19.05	19.50	19.96	20.41	20.87	21.32	21.77	22.23
50	22.68	23.13	23.59	24.04	24.49	24.95	25.40	25.86	26.31	26.76
60	27.22	27.67	28.12	28.58	29.03	29.48	29.94	30.39	30.84	31.30
70	31.75	32.21	32.66	33.11	33.57	34.02	34.47	34.93	35.38	35.83
80	36.29	36.74	37.20	37.65	38.10	38.56	39.01	39.46	39.92	40.37
90	40.82	41.28	41.73	42.18	42.64	43.09	43.55	44.00	44.45	44.91

KILOGRAMS TO POUNDS

(1 kilogram = 2.2046 pounds)

Kilograms	0	1	2	3	4	5	6	7	8	9
0	0.00	2.20	4.41	6.61	8.82	11.02	13.23	15.43	17.64	19.84
10	22.05	24.25	26.46	28.66	30.86	33.07	35.27	37.48	39.68	41.89
20	44.09	46.30	48.50	50.71	52.91	55.12	57.32	59.52	61.73	63.93
30	66.14	68.34	70.55	72.75	74.96	77.16	79.37	81.57	83.77	85.98
40	88.18	90.39	92.59	94.80	97.00	99.21	101.41	103.62	105.82	108.03
50	110.23	112.43	114.64	116.84	119.05	121.25	123.46	125.66	127.87	130.07
60	132 28	134.48	136.69	138.89	141.09	143.30	145.50	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.75	171.96	174.16
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.00	196.21
90	198.41	200.62	202.82	205.03	207.23	209.44	211.64	213.85	216.05	218.26

CROSS REFERENCE CHART

BALL VALVES

KITZ	APOLLO	MILWAUKEE	NIBCO	RED-WHITE	WATTS
51	9A-100/91-100	-	T-560-BR-Y	-	-
58	70-100	BA-100	T-580/T-FP600	5092	FBV-3
59	70-200	BA-150	S-580/S-FP600	5095	FBVS-3
62	82-100	BA-300	T-590-Y/T-595-Y	5050	B-6800
63	82-140	BA-350	S-590-Y/S-595-Y	5051	B-6801
68	77-100	BA-125	T-580-70/T-585-70	5044F	B-6080
69	77-200	BA-155	S-580-70/T-585-70	5049F	B-6081

INDUSTRIAL THREADED BALL VALVES

KITZ	APOLLO	WORCESTER	NIBCO	VELAN	WATTS
49M	89-100	-	T-580-CSR-66	-	C-7000-SS
50	-	-	-	-	-
119	92-100	5846R	T560-CS-R-66-FS	HB-1000	C-7100-M2
217	73-100	4846-RSE	-	-	C-7000
237	-	-	-	-	C-7200
39	76-100	-	T-580-S6-R-66	-	S-8000
52	-	-	-	-	-
129	96-100	5866R	T560-S6-R-66-FS	HB-1000	S-8100-M2
227	76-100	4866RSE	-	EE-1000	S-8000
247	-	-	-	-	S-8000

Chart indicates comparable figure numbers of other manufacturers' products of similar design or use and should only be used as a guide, some variation in detail is possible.

NOTES

⚠ CAUTION

Pressure-temperature ratings and other performance data published in this catalog have been developed from our design calculation, in-house testing, field reports provided by our customers and/or published official standards or specifications. They are good only to cover typical applications as a general guideline to users of KITZ products introduced in this catalog.

For any specific application, users are kindly requested to contact KITZ Corporation for technical advice, or to carry out their own study and evaluation for proving suitability of these products to such an application. Failure to follow this request could result in property damage and/or personal injury, for which we shall not be liable.

While this catalog has been compiled with the utmost care, we assume no responsibility for errors, impropriety or inadequacy. Any information provided in this catalog is subject to change without notice for error rectification, product discontinuation, design modification, new product introduction or any other cause that KITZ Corporation considers necessary. This edition cancels all previous issues.

⚠ WARNING

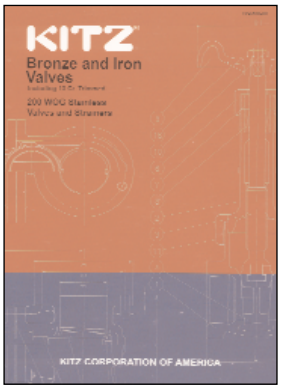
This product contains a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm.

KITZ CORPORATION AMERICA

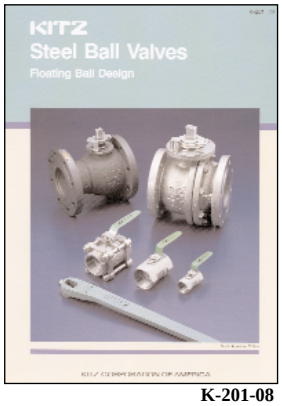
PRODUCT CATALOGS

KITZ has a wide selection of products available.

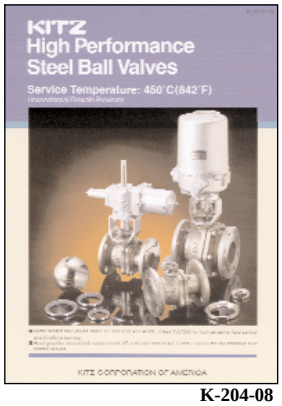
Please call Customer Service at 800-772-0073 for additional catalog requests.



BIV-100-00

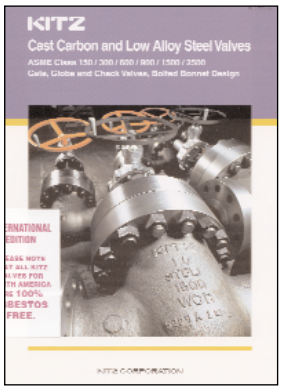


K-201-08

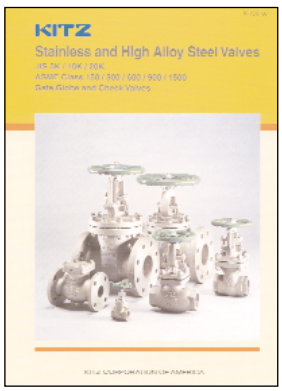


K-204-08

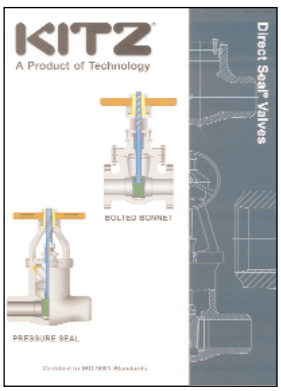
K-203-08



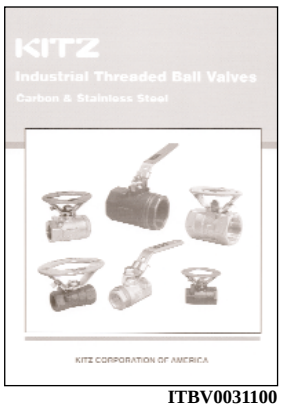
K-170-06



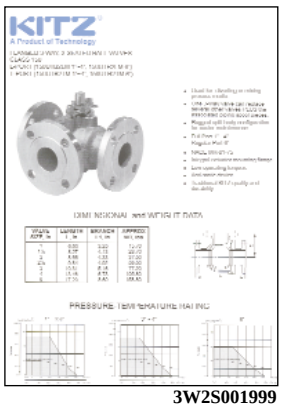
K-150-06



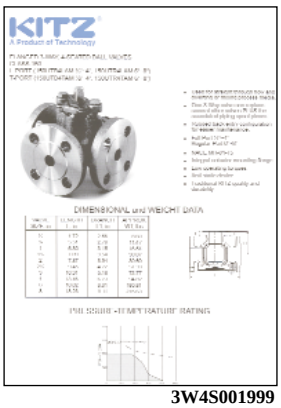
KCCGP 0900



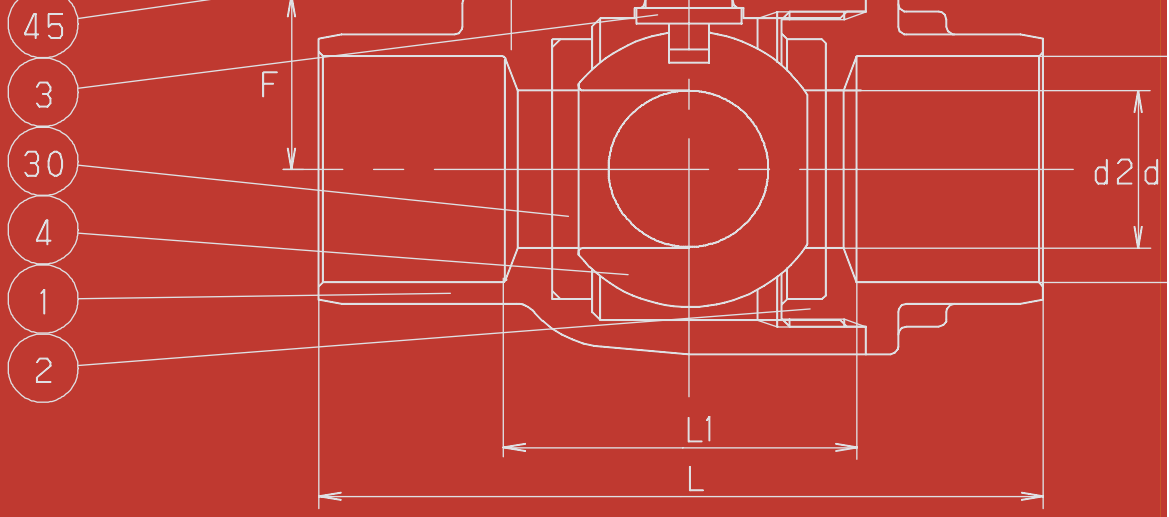
ITBV0031100

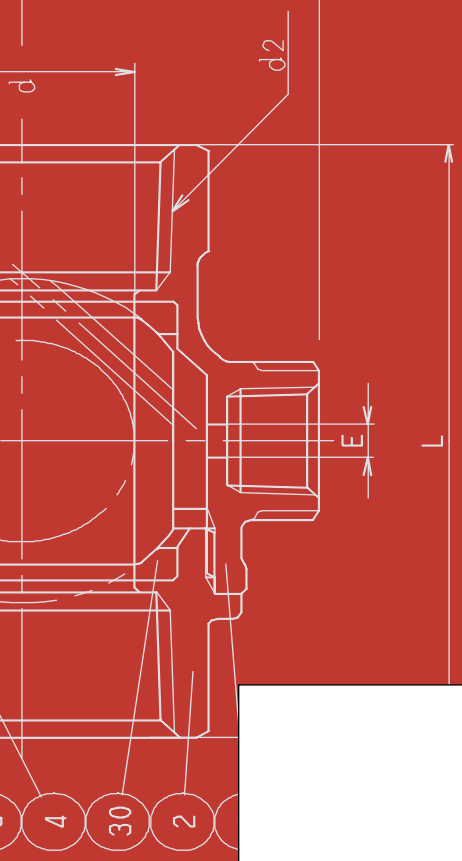


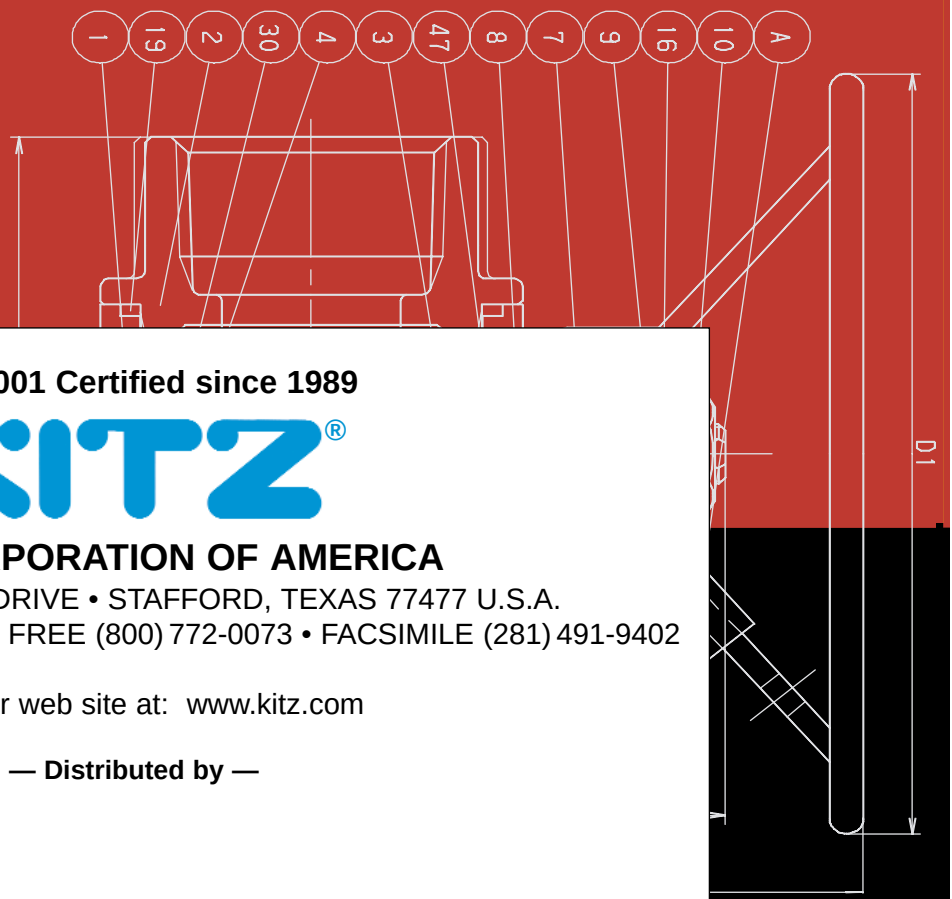
3W2S001999



3W4S001999







ISO 9001 Certified since 1989

KITZ®

KITZ CORPORATION OF AMERICA

10750 CORPORATE DRIVE • STAFFORD, TEXAS 77477 U.S.A.

PHONE (281) 491-7333 • TOLL FREE (800) 772-0073 • FACSIMILE (281) 491-9402

Visit our web site at: www.kitz.com

— Distributed by —